

MONTANA OUTDOORS

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MONTANA OUTDOORS

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the cover

Probably the most serious factor affecting Montana waterfowl populations is a scarcity of prime breeding habitat. In the cover article (page 22), Frank Gjersing suggests some simple ways to increase this habitat. Both the mallard pair on the front cover and the pheasants on the back cover are photos by Jon Cates.

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a livable environment for WILDLIFE is a quality environment for MAN

It is becoming a tradition to devote the September/October Director's Column to landowner/sportsman relationships. The rapidly approaching hunting season will soon send urban Montanans out to once again harvest nature's annual crop of wildlife. Since much of this wildlife is found on private land, the opportunity for landowner/sportsman contact certainly presents itself.

Volumes have been written on the problems and difficulties these respective groups have with one another. Unfortunately, little is said or documented on the many worthwhile friendships, evolved from a day of hunting, that endure the test of many years and many hunts.

This fall, I urge both landowner and sportsman to look at the coming season as an opportunity to convert a few more strangers into lasting friends. Both groups have problems that could be solved with more understanding on the part of each.

Rural Montanans have many problems with matters such as price ceilings, export markets and government controls that urban Montanans should understand and sympathize with.

This fall, let's all look at the hunting season as a chance to improve the traditional landowner/sportsman situation which is currently being worked on by landowner groups, sportsmen and this department.

For the hunter, I have one simple rule to follow: "Give the landowner a reason to like you."

For the landowner, I have one thought: "Understanding is seldom born in confrontation." 

Wes Woodgerd, Director
Department of Fish and Game

by Reuel Janson

someone bagged the early bull season

WE SAT MOTIONLESS in the bear grass as the six-point bull emerged from the timber and came straight toward us. He stopped eight steps from a lone lodgepole pine and scraped it with his antlers, first up one side and then the other. He was at the peak of the rut, and we could see his mane standing on end, and his bloodshot eyes rolling in their sockets. Finishing with the small tree, he raised his head and stared at us for a long moment. Suddenly he bounded to one side, looked us over again, and trotted away up the hill. We had attracted him merely by responding to his bugling by whistling with our lips. The hunting season was open only on grouse at the time, so the bull was not jeopardized by my 20-gauge single shot.

Bull elk may behave in this manner during the peak of the breeding season (late September and early October) in habitat not disturbed much by man's activities, and a few are easily taken by hunters during early elk seasons. Others are more wary and quickly learn to evade hunters.

Last fall, I spent the night before the opening of the early bull elk season in a pickup canopy near a large clearcut. Elk were bugling all night. At dawn we crept to the edge of the clearcut and saw several cows and a huge bull silhouetted against the eastern sky. By the time it was light enough to shoot, all the elk had disappeared into the timber. Our efforts to bugle this bull—or any other bull—into shooting range, were fruitless.

EARLY SEASON MISUNDERSTOOD

Considerable controversy, much of it based on fallacy, resulted from the early "bugle" elk seasons in 1971 and 1972. Although often misunderstood, the early season provides a maximum of recreational hunting for those who want to take advantage of it. The purpose is *not* to attract more nonresident money, *nor* to provide more business for outfitters, as some have charged. In fact, most nonresident hunters would rather come later

continued





During the September rut, bull elk often battle to build or maintain harems. (photo by Jon Cates)

when they can hunt deer and elk of either sex. Many outfitters did not bother to book hunters for the early bull season because five days is too short a period to make it profitable.

Some people like to camp out and hunt while the weather is still relatively warm, but these are in the minority. During the 1971 and 1972 early seasons, department biologists observed that many hunters drove out from town each morning. Most just hunted the roads, hoping for a chance to shoot at a bull elk. The road-hunters often discovered their chances were pretty slim and many became disgruntled with the early season.

HARASSMENT

Probably most of those who objected to the early bull season believed harassment drives elk back into less accessible areas, making hunting more difficult during the general season. There may be some truth to this. Checking station figures showed lower game harvests for the opening of the general big game seasons in 1971 and 1972 than in previous years. On the other hand, some hunters regard the early season as a good conservation measure because it makes elk wary and less vulnerable when the general season opens. However, poor hunting during the opening of the 1971 and 1972 general big game seasons could also be blamed on mild weather.

Few elk fell to hunters during the early bull season. Five checking stations sampling certain areas in west central Montana found that in 1971, 912 hunters bagged 65 bull elk (seven per cent success); in 1972, 817 hunters took 49 bulls (six per cent success). (One reason for a lower kill in 1972 was that only branch-antlered elk were legal game, while spikes also could be taken in 1971.)

In comparison, hunting success during the entire elk season (early plus general) was 17 per cent in 1971 and 13 per cent in 1972.

Although hunting success was low during the early bull season, the number of elk killed was a significant percentage of the region's total elk kill—13 per cent in 1971 and 14 per cent in 1972. (Questionnaire returns indicated the total Region Two elk harvest was 3,453 in 1971 and 2,548 in 1972; the number of bulls killed during the early season was 435 in 1971 and 365 in 1972.) Bulls taken during the early season were not available to general season hunters, thereby slightly reducing their chance of success. This, of course, increased complaints about the early season.

MEAT SPOILAGE

Another objection to the early season is that meat spoils more easily because of generally warmer weather. But most spoilage occurs because some hunters don't properly care for the meat.

In warm weather, the carcass should be dressed, skinned, quartered, hung in the shade and covered with cheesecloth *immediately* after killing.

The quarters should be left hanging until they are completely cooled, preferably overnight. Then they can be transported without danger of spoilage. Some hunters and packers prefer to leave the hide on the quarters since this keeps them cleaner, but the meat does not cool as quickly. A cheesecloth covering on each quarter is necessary on warm days to keep blowflies from depositing eggs on the meat. Also, the porous cloth helps keep the meat clean while it is packed out. (Canvas or heavy cloth wrapping also keeps meat clean and cool during packing.)

POPULATION TRENDS

The most faulty arguments against the early bull season concern its effects on reproduction and population trends. Department research shows early bull seasons *do not endanger* the elk population. Elk have been known to breed from mid-September to mid-January, but the peak of breeding activity occurs about the first of October, with most mating occurring from September 20-October 10. Thus, the five-day bull season beginning September 15 ends before the peak of the breeding season begins. Even if the hunting season lasted all through the breeding season, it probably wouldn't interfere with reproduction. Elk are active at night while hunters are sleeping; also, only a few minutes are needed for copulation. A study on the National Bison Range (Morrison, et al), showed that cow elk in estrus (heat) are receptive to bulls from four to seventeen hours. They come into estrus at intervals of 21 days during the fall, as long as they remain nonpregnant. If the cow is kept away from bulls during one estrus period she will probably be impregnated during a following period. So, only a very large and lengthy disturbance could disrupt breeding activities of elk.

(Observations on the Bison Range elk also showed that human disturbance usually interrupted breeding only briefly. Copulation took place within a few minutes after the disturbance ended.)

Actual production figures for western Montana elk herds do not show fewer calves produced because of early seasons. Two Bitterroot hunting districts together had 15 years of early either sex elk seasons* which ran right through the peak breeding season (about Oct. 1). The same districts also had six years with no early seasons. During this time, a checking station at Darby collected information on the number, sex and age of elk killed by hunters. The proportion of calves checked each fall is an index to the breeding success of the preceding fall. In the 15 early hunting seasons, an average of 43 calves per 100 cows was checked at the station, while in the six years following regular

*In some years, neither of the two districts had an early open season. In others, both or one of the two had early seasons. The total number of early seasons in the two districts was fifteen.

seasons (opening October 15 or later), there were also 43 calves per 100 cows.

So, one can easily conclude that the early season had no effect on elk reproduction.

Each winter, department biologists make composition counts of elk herds to determine the proportion of bulls, cows and calves. For the five-year period before the first early bull season in west central Montana (1971), approximately 20 bulls per 100 cows were found in winter elk herds. For the two-year period since early bull hunting began, the figure is the same. This indicates no significant reduction in the proportion of bulls.

In other Western elk hunting states—Colorado, Oregon and Washington—hunters harvest more than 90 per cent of the bulls. Few branch-antlered bulls are left after each season, yet calf production runs as high as the best in Montana, more than 50 calves per 100 cows. Spikes do most of the breeding in these areas.

Only one year of calf production information is available since the first early bull season in western Montana in 1971. The winter herd composition counts made during 1972-73 should show the effect, if any, of this season on the 1972 calf crop. Similarly, effects of the 1972 bull season would be detected in the 1973 calf crop. (Of course, figures on the 1973 calf crop won't be available until after the 1973 season.)

For the five-year period before the 1971 early bull season, an average of 36 calves per 100 cows was found in the winter elk herds of Region Two. During the winter of 1972-73, composition counts showed 44 calves per 100 cows in the areas which had been open to early bull hunting in 1971. *Thus, calf production was higher following the early bull season than before it.*

This doesn't imply that early bull hunting increased calf production, since other factors were involved. *But it is apparent that early bull hunting certainly did not reduce calf production.*

Additional evidence comes from the cooperative elk-logging study in the Sapphire Range (between the Bitterroot Valley and Rock Creek drainage). During the winter after the 1971 early elk season, 14 cow elk were trapped, and all were pregnant. Only seven were trapped during the winter following the 1972 early bull season, but again all were pregnant.

Since neither the proportion of bulls nor calves has been reduced by early bull seasons, the only

way elk populations could have been hurt was by illegal killing of cow elk. Although this probably occurred, no evidence exists to support accusations that game law violations were significantly more frequent than during any other type of season.

Aerial counts show increasing elk numbers in many areas since the first early elk season in 1971. *Elk have not increased because of the early season, but in spite of it.* Cutbacks in length of the either sex season and a low elk harvest in 1972 because of mild fall weather are largely responsible for the population increase.

Much of the opposition which killed the early bull season for 1973 assumed that early seasons are harmful to the elk population. The evidence does not support this argument. That reduces the issue to one of personal preference. Would you rather hunt early or later? Many people would like the chance to choose either, and *there is no biological reason why they should not have this opportunity.*

As numbers of hunters increase and back country becomes more accessible, we will eventually be faced with the choice of whether we want maximum opportunities to hunt and minimum opportunities to kill, or vice versa. Bull seasons, whether early, general or late, provide additional hunting opportunities to many people, but a low rate of success. At the other extreme, a limited either sex permit season limits hunting to a small number lucky enough to draw permits, with a higher degree of predicted success. Which do hunters prefer?

Actually, characteristics of each hunting area must be considered in setting regulations. An area easily accessible by road, with gentle relief, not much timber cover and large expanses of open grassland must have a closely regulated harvest of antlerless elk, such as the limited permit system provides. In contrast, a rugged, heavily timbered area with much roadless back country or wilderness provides a long, unlimited, either sex season without overharvest. But regardless of the type of area, the female segment of the herd must be carefully managed to sustain an elk population. Most of the bulls are surplus and in some areas could be hunted from Sept. 15—Dec. 15 without reducing numbers to a critical level. Most elk herds in Montana could sustain an early bull season in addition to the later regular season. However, factors other than the effect on the elk population must be considered. Early seasons may cause conflicts in hunting districts with large areas of ranching on private land or where livestock grazing seasons on public land overlap hunting season opening dates.

Although the early bull season is dead for 1973, it could be revived in following years if hunters indicate enough interest. If early bull seasons are considered by the Fish and Game Commission in future years, please express an opinion based on valid self-interest, rather than on the basis of fancied harm to the elk herd—which “just ain't so.”



ABOUT THE AUTHOR

Reuel G. Janson is the Region Two (Missoula) game manager for the department. He received B.S. and M.S. degrees in wildlife management from Utah State University, Logan. Janson first began work with the department in 1955 as game manager at Great Falls. Prior to that, he worked as a game biologist in South Dakota.





Jerky—A Nutritious Snack

Just about anybody who hunts has his or her ideas about making jerky. It's a nutritious snack and few foods store more easily, to say nothing of the superb exercise it offers teeth and mandibles. Although jerky is a very old method of preserving meat—it was used long before modern refrigeration and freezing came along—it's still a practical and easy method of enjoying game all through the year.

Lean venison, moose, elk or any similar red meat, including beef, will work. Take a flank or a cut with long grains of muscle and cut it into strips along the grain of the meat. Cut into strips from five to six inches long, about one-half inch across and one-fourth inch thick. Be sure to remove all fat and gristle because they will turn rancid.

To flavor, simply roll the meat in salt and—if you like spicy jerky—freshly ground black pepper. If you want more flavor, make a marinade from a combination of spices such as onion salt, garlic salt, hickory-smoked salt, soy sauce and various meat sauces such as Worcestershire, HP, Heinz or A-1. Herbs such as oregano, marjoram, sweet basil or thyme may be added. Soak the meat in the marinade for 24 hours in a covered dish in the refrigerator. Don't use as much spice as you would in regular cooking; as with any dish, it's always better to have too little spice than too much. Remove the meat from the marinade and dry with paper towels.

Old-timers say the next step isn't necessary, so use your own judgment. Blanching *will* destroy any bacteria on the surface of the meat. To each quart of water, add one tablespoon of salt and bring to a boil. Dip each strip of meat into the water and hold it there for about 15 seconds. The hot water will turn the red meat a whitish-gray.

String a fine wire through each piece of meat, leaving space between the pieces. Thin shish kebab skewers work nicely and are much easier to handle than wire. Place the wire or skewers in the oven over a high rack so that all the pieces of meat hang down with air in between. Set the oven at the lowest possible temperature (140-180°F.) and leave the door ajar to allow air to escape. The jerky is done when it is dark on the outside and chewy, but not brittle. The drying process will take about five hours.

If you have a little carpentry skill, build a small frame from saplings or some other green wood, about three feet high. It doesn't have to be very elaborate. Build a fire underneath the frame using hardwood and allow it to burn down to hot coals. String the jerky on wire or skewers and hang from the frame over the coals. Put a few green branches on the fire from time to time to encourage a good smoke. If the fire starts blazing, don't let it scorch the meat; keep it hot and smoking for about 10 hours. Check the meat for doneness during the last stages of cooking.

Jerky keeps best in containers which allow air to circulate. A canvas bag or a glass jar with a few holes punched in the lid work well. It keeps up to a year without damage to taste or quality.

Jerky travels anywhere. It's great as a treat in the car when nobody wants to bother with pots and pans, garbage and sticky messes. Take it to the office or give it to the kids to take to the movies. Tuck it in your pack on hunting, fishing or camping trips. Give jerky a try—its easy preparation, high protein content and good taste will make it a hit.

ALUMINUM CANS

Perhaps you gave little thought to an aluminum can tossed by the side of the trail on your last hike. However, that aluminum can will still be there until the summer of 2472, when it will have deteriorated into dust-sized bits of aluminum oxide.

The conventional steel can, often plated with a thin film of tin to resist corrosion, breaks down into harmless and even useful rust (iron oxide) in one-fifth the time, according to Dr. Edwin L. Owen, a Pennsylvania State University specialist in metal corrosion.

The least perishable of the commonly thrown away materials is glass. A bottle left in the forest might not break down into sand-sized particles for a million years.

"For me, and for thousands with similar inclinations, the most important passion of life is the overpowering desire to escape periodically from the clutches of a mechanistic civilization. To us the enjoyment of solitude, complete independence and the beauty of undefiled panoramas is absolutely essential to happiness. In these days of overcivilization, it is not mere sentimentalism that makes the virgin forest such a genuine delight."—
Robert Marshall, 1925

editorial

YES, WE BELIEVE IN PUBLIC INVOLVEMENT, BUT WE GOTTA CUT THOSE TREES

In recent years, most new developments of natural resources have been open to some degree of "public involvement." Although the concept remains valid, the situation surrounding a proposed timber sale just north of Yellowstone National Park (YNP) makes us wonder about the true worth of public input.

To explain, consider these facts:

POINT—The U.S. Forest Service (Gallatin National Forest) recently decided to go ahead with the hotly contested Cedar-Bassett Creek timber sale. The proposed logging site, about two or three miles north of YNP, covers 1,000 acres of semiprimitive, roadless forest land.

POINT—That decision came after four "public involvement" meetings at which *90 per cent* of those testifying *opposed any logging* activity in the area.

POINT—The region supports a healthy resident elk herd of about 300. During winter months, many more elk migrate from YNP and depend on this range. Department biologists consider this region irreplaceable to elk because it (1) is a traditional calving ground, (2) serves as a prime winter range and (3) during the hunting season, provides essential escape cover. Logging activity would impair all three.

POINT—The area is highly coveted by sportsmen. In fact, more than 11,000 hunters applied for permits in 1972 when a special late hunt was planned. The hunt (commonly known as the Gardiner hunt) would have taken place on an area bordering the proposed logging site, not on the contested area itself. However, the Cedar-Bassett Creek region provides life-giving winter range for the elk herd.

POINT—The FS says it can make the timber sale compatible with elk. However, judging from past experiences on similar agreements, department biologists insist elk herds will be adversely affected. And, they have research data to support their contentions.

POINT—The entire area is an unstable land block, evidenced by the many slides and mud flows occurring there. So, logging operations and new roads would cause serious watershed damage which could be worse than "serious."

POINT—Unless very carefully controlled, logging will cause increased siltation of the area's streams.

POINT—Cutthroat trout spawn in Cedar Creek. So logging activity in that drainage would, according to fisheries biologists, endanger that prime spawning habitat.

POINT—The FS and this department are presently cooperating in an extensive elk-logging research study. But the FS *refuses to wait* for the results before making its final decision on this and other sales.

POINT—This department has *officially opposed* (several times) *any logging activity in this area*.

POINT—YNP officials also refuse to accept any logging in the Cedar-Bassett Creek area.

And, last but far from least, let me repeat:

POINT—The FS has placed timber above all these conflicting points and *is going to sell the trees regardless*.

Now, for my questions:

What is meant by "public involvement?"

Of what worth is it?

Are such things as aesthetics, watersheds and wildlife less important than saw logs?

Will the public stand by and let themselves be ignored by the FS?

Watch future issues of MO for the answers.—*Kerry Constan*

SO THE PEOPLE MAY KNOW

The purpose of this editorial is to correct the mistaken impression created by certain writers on ecology and environment, that cherry growers on the east shore of Flathead Lake are responsible for introduction of the DDT which is asserted to be threatening existence of the colony of ospreys which make the lake their summer home.

Specifically, this editorial refers to the area on the east shore of Flathead Lake. Growers in this area are members of the Flathead Lake Cherry Growers, Inc., largest of the cherry packing organizations.

Articles in recent issues of MONTANA OUTDOORS tend to place the blame (to a large degree) for the declining population of the osprey

on the spraying methods of the growers through the use of the pesticide DDT.

This is not a fact. It appears that researchers and writers on the osprey jumped to unwarranted conclusions because orchards must be sprayed several times each summer. Also, it appears they merely assumed that DDT was being used because traces of this material were found in osprey food and eggs.

The truth is that DDT has not been used generally as a spray in this area for about 25 years. There may be one or two very minor exceptions. Actually, DDT is not a successful spray for cherries. A few people may use a little DDT for dusting some vegetables and flowers—chiefly roses—but that would be insignificant as a pollutant.

While a few cherry growers have their own spray outfits, most of the spraying here is done by custom sprayers. Among suppliers of this area, none have sold DDT to cherry growers.

It has been reported that DDT has been used in the valley north of the lake for mosquito control and also for control of the spruce beetle in the Flathead drainage.

It should be clear to all concerned that the cherry growers are not the culprits responsible for DDT residues in Flathead Lake waters. We believe all the growers along the lake are just as concerned with protection of wildlife and prevention of pollution in the lake as are the previously mentioned environmentalists.—*the Directors of Flathead Lake Cherry Growers, Inc.*

YES, WE WOULD LIKE TO KNOW

Although not specifically mentioned, the above editorial refers to an article published in the March/April 1973 issue of MONTANA OUTDOORS—"Final Call for Montana's Finest Fisherman?," by Doug and Don MacCarter.

We agree. Today, no factual evidence exists that implicates cherry growers as DDT users. However, there isn't evidence implicating anyone else either. So, who's the culprit?

Someone uses (or has used in recent years) DDT and/or its derivatives in the Flathead Lake area. We—along with quite a few others, it seems—would like to know who.

Will the guilty one please step forward?—*Bill Schneider*

SOMETIMES IT'S THE LITTLE THINGS THAT COUNT

Perhaps some people wonder about the cooperation between outfitters and this department. To date, that relationship has mostly been one of regulation of the industry by the department's law enforcement division. But now we're trying to change that a bit.

Some outfitters believe the only way to satisfy their clients is to provide them with a trophy. However, we believe many people who hire outfitters want more than that. They want to appreciate nature in all its splendor—the aesthetics and all the small things that go with it.

The outfitter can satisfy that need. On the way to or from the hunt, he can explain how the bark was scuffed off the tree by a bear, if a certain plant is edible, about a goat track there in the mud or some basic geology of the area.

Yes, they're all small and seemingly unimportant things, but in the end, it will make the client's trip more memorable, even if he doesn't bag a trophy buck or catch a big rainbow trout—*Joe Gaab*

SHORT AND SWEET

Because of the nation's energy situation, we recommend that pleasure driving become the ex-"most popular form of outdoor recreation."



THE CATCHALL

Are strip mines always safer?

During the past year, there has been some talk of banning surface mining of coal in favor of underground operations. Most such discussions sooner or later get around to safety. It's commonly believed that many more lives are lost in deep mines. Although nobody forgets that surface mining means more damage to the landscape, it's quite impossible to decide how much environmental degradation justifies the loss of one human life.

So, in the end, the strip mining goes on.

But alas! The Bureau of Mines unearthed some interesting statistics. Although the overall comparison confirms more accidents and deaths occur in deep mines, a close look at some individual companies proves it doesn't have to be so.

U.S. Steel, for example, obtains 99 per cent of its coal from deep mines and has the *very best* safety record of the major firms studied. At 2.72 injuries per million man hours, U.S. Steel puts to shame such giant coal companies as Peabody Coal Co. and Consolidation Coal Co., which rank one and two (in coal production) respectively. (Both are active in Montana.) Peabody gets 80 per cent of its coal from surface mines and Consol, 30 per cent.

Bethlehem Steel rates second in prevention of injuries. Again, this company operates mostly from deep mines.

These two comparisons, coupled with others of less dramatic proportions, tend to tear a few holes in the "strip mining is always safer" theory.

When asked about their admirable safety record by the *Wall Street Journal*, U.S. Steel's head of coal operations, Jesse Core, said, "With all the time, money and effort we've put into this, we better have a better safety program or we ought to have our rear kicked. We've been at our safety program a long time, and the other companies haven't."

Unfortunately, programs such as U.S. Steel's take a big slice from the profit margin, which stockholders cherish. That, in effect, is why many companies have shoddy safety regulations.

The Wall Street Journal did some asking around on that point and quoted some unnamed representatives from major coal companies.

"Safety is a cost we're willing to bear," said one spokesman. "It can be said that if more money has been spent on safety, profit has been less."

A companion from another company put it like this: "I don't know what else you can say. If your stockholders expect to get a certain return, you've got to get it. And therefore you've got to be content with less safety if you're going to get more profit."

Another said, "If my boss was beating me over the head on production and costs, that's what I'd concentrate on."

The Bureau of Mines gathered the figures for 1968-1971, before the full impact of the federal Coal Mine Health and Safety Act of 1970. So, the picture

Here's how the 10 biggest producers compare. The 1971 production rank for each company is in parentheses.

Injuries per million man-hours:

U.S. Steel mines (4)	2.72
Bethlehem Steel mines (10)	12.27
Consolidation coal (2)	18.68
General Dynamics mines (6)	38.74
Peabody Coal (1)	46.91
Old Ben Coal (9)	47.40
Amax Coal (8)	48.23
Pittston (5)	56.57
Eastern Associated Coal (7)	62.51
Island Creek Coal (3)	72.13

The differences are less marked but still significant when fatality rates are compiled.

Fatalities per million man-hours:

U.S. Steel mines (4)	0.28
Amax Coal (8)	0.35
Bethlehem Steel mines (10)	0.44
Eastern Associated Coal (7)	0.53
General Dynamics mines (6)	0.72
Island Creek Coal (3)	0.85
Peabody Coal (1)	0.94
Old Ben Coal (9)	1.07
Pittston (5)	1.10
Consolidation Coal (2)	1.52

may be slightly brighter today. (That law forced all coal operators — surface or underground — to adhere to strict safety standards.)

Another reason for the impressive records of the two steel companies is that their coal mines are mostly "captive" which means that coal isn't subject to commercial competition. It's used

SPRINGBOARD

"To many western Montanans, eastern Montana is just one great big ugly." — *Gene Tuma, conservation director, Peabody Coal Co.*

"Strip mining, while it is going on, looks like the devil, but... if you look at what these mountains were doing before this stripping, they were just growing trees that were not even being harvested." — *Audrey J. Wagner, chairman of the board, Tennessee Valley Authority*

FOR DISCUSSION

to make steel in their own plants. Conceivably, that circumstance could free more capital for safety precautions.

But, nevertheless, it seems we have some documentation that underground mining doesn't have to be more dangerous than surface operations.

DID YOU KNOW?

- Montana's first game law in 1893 protected the buffalo and Chinese (ring-necked) pheasant, and carried a \$200 minimum fine.

- In 1895, female moose and elk were completely protected, and the first set of bag limits included 2 bull moose, 3 bull elk, 8 deer, 8 sheep, 8 goats, 8 antelope and 100 grouse or prairie chickens. Using dogs to hunt was outlawed, except to catch cripples.

- The same 1895 law prohibited selling of "speckled trout" (native cutthroat), fishing by any method except hook and line and dumping sawdust into or near a stream.

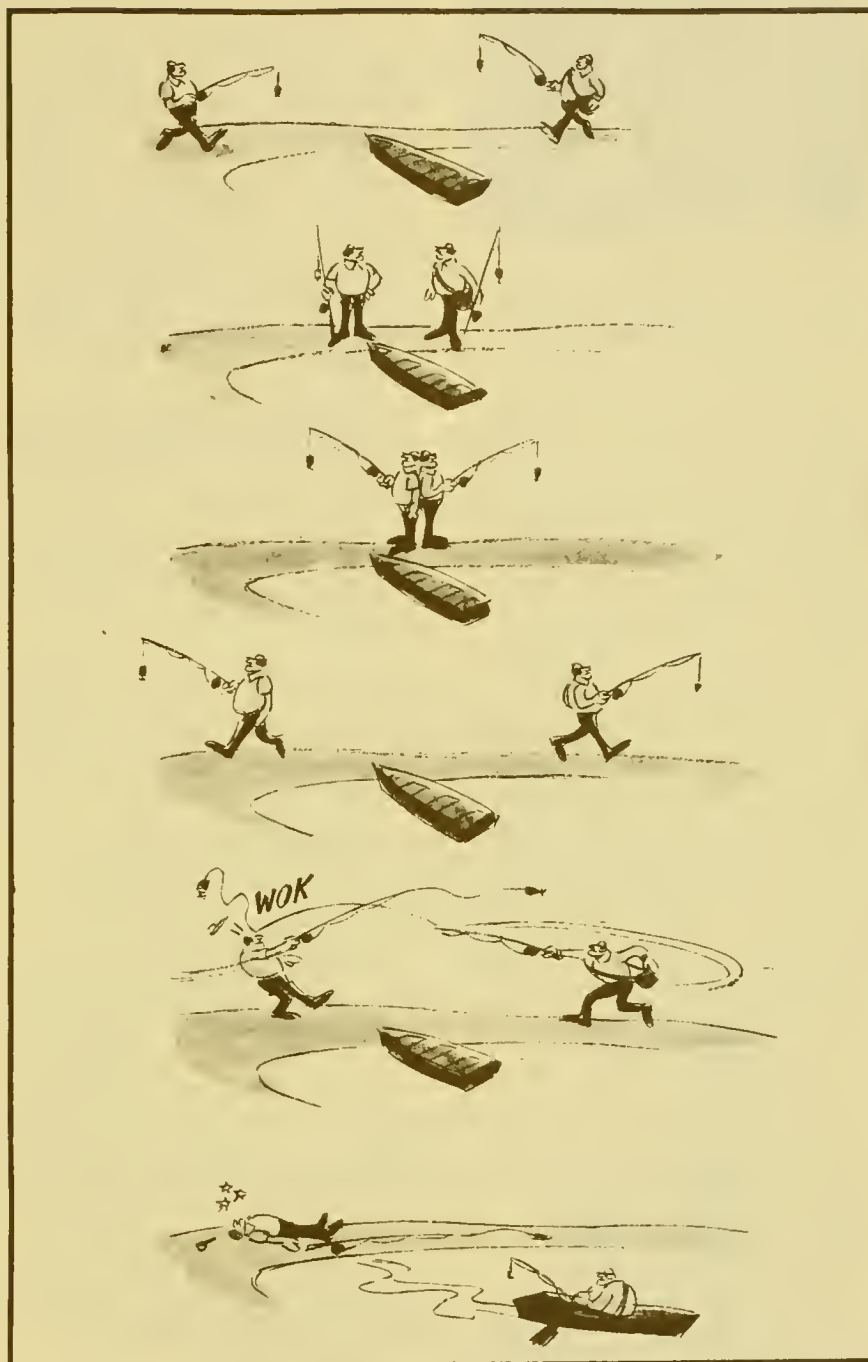
- The first game wardens were appointed in 1895 by petition from at least 100 Montana taxpayers and were paid \$100 per month plus ½ the receipts from fines.—Joe Gaab

OUTFITTER/CLIENT RELATIONS

Whether you're an outfitter or an outfitter's client, there are a few things to get straight *right away*. They might keep both of you from getting in trouble later on.

They are: liquor and gunpowder never mix, hunting safety, how to handle domestic stock, how to keep from getting lost and what should be done if someone does, proper trail and camp manners, complete agreement on prices and services to be offered, strict adherence to all fish and game laws, respect for private and public landowners and a plan for general cooperation.

Understanding and cooperation on these points can create a



lasting friendship and result in a quality outdoor experience for both outfitter and client.

GUN LAWS AND MURDER

The FBI's Uniform Crime Reports for 1971 provide some very interesting facts on gun control legislation. For example, Hawaii requires the registration of all guns, yet in 1971 the Honolulu homicide rate increased by 50 per cent over 1970. New

York, where sportsmen and collectors live in the shadow of the Sullivan Law and endure endless administrative harassment, saw its homicide rate go up 26 per cent for the same period.

Meanwhile, several of the western states most often pointed to with fear and trembling by the anti-gunners recorded substantial decreases in the incidence of homicide: South Dakota down 68 per cent, Idaho down 27 per cent, Arizona down 26 per cent, Oregon down 27 per cent. In some of these

continued

from the Wyoming Wildlife magazine

states, it is entirely legal for folks to carry a handgun as they go about their daily business.

Returning to an area where firearms are strictly controlled, Mayor Daley's Chicago more than doubled its homicide rate during its first three years under absolute registration. Even more intriguing is the fact that between 1965 and 1971, the number of killings committed during the course of robberies skyrocketed a full and fantastic 875 per cent.

It is painfully obvious that the violent criminal, the type who is likely to resort to deadly violence, doesn't have much trouble obtaining a gun. The FBI's National Crime Information Center lists over 560,000 stolen firearms, and nobody knows how many gun thefts are never reported to the FBI.—*National Shooting Sports Foundation*

A WARNING FROM DOWN SOUTH

The Conservation Foundation just released a comprehensive study of the Southwest energy complex, including the controversial Four Corners region.

The report suggests federal officials (the Bureau of Reclamation, in particular) failed to give adequate attention to environmental consequences and that the North Central region (Montana included) is in danger of receiving the same level of consideration.

According to the report's author, Malcolm F. Baldwin, the major issues raised by the Southwest energy complex are: (1) air pollution from power plants "that will exceed federal-state standards and cause potentially serious harm to human health and the biota [plant and animal life of a region]," (2) strip mining of coal,

"which, like that proposed for the North Central region, will proceed without assurance that reclamation or revegetation will be possible," (3) heavy water demands on the Colorado River "at the sacrifice of other possible uses in the future" and (4) aesthetic degradation "of a great tourist region, resulting from air pollution, transmission lines, strip mining and the power plants themselves."

Does any of that sound familiar?

BY-LINE MISSED

In the last issue (July/August 1973), the Catchall contained a feature entitled, "Montana National Park." Charlie Femling of the *Billings Gazette* wrote it, and we accidentally omitted his credit line.

why you didn't get your special permit

Determining which hunters get a chance to bag moose, bighorn sheep, mountain goat or antelope isn't easy.

The lucky hunters—those who received permits—don't really care how it happened. But those who didn't get theirs sometimes grumble. They *do* wonder how it was done.

Hopefully, the following will answer most questions.

Q. Why are drawings conducted at all?

A. There just are not enough of some game species to justify a wide-open hunting season, but still, these species must be cropped. Game workers determine how many licenses it will take to properly crop the various species in each hunting district. Fish and game commissioners review proposals of game workers, and consider comments from sportsmen, stockgrowers and other interested parties before determining the final quotas.

State law requires that if applications for antelope, moose, sheep and goat exceed the quotas, the available licenses shall be awarded by drawings. At first, it was simply a matter of dumping slips of paper into a container and having someone with a long arm reach in and pick the winners. The system, though beautifully simple, was open to charges of hanky-panky, and it was slow. As both the numbers of licenses and competition for them grew, new and faster systems were needed.

Antelope licenses have been issued each year since 1943. In 1943, 750 were authorized. The tentative antelope quota for 1973 is over 30,000. Imagine picking those out of a hat!

The sheer numbers of special license applications make drawings complicated. State law requires, for example, that persons who shoot a bighorn sheep, mountain goat or moose are not eligible to apply for another license during the succeeding seven years.

A regulation that cleared the Administrative Procedure Act provides that persons who have unsuccessfully applied for a moose, sheep or goat license over the past five years will be given preference in drawings. Thank heavens for computers!

Q. How is the drawing conducted?

A. Many hurdles are inherent in such a complicated system. To illustrate, here's a brief explanation of how the 1973 drawings were conducted.

Antelope

Let's start with the antelope since this drawing differs from those for moose, sheep and goat. Your application was sent to the Department of Fish and Game in Helena on an envelope prepared especially for that purpose and available at Department of Fish and Game offices and at license agents. To be eligible for the drawing, it needed a post office

cancellation date no later than midnight, July 15, 1973.

After they were received the procedure went as follows:

- The envelopes were opened and the money removed and deposited.
- Two business machine cards, each bearing information included on the application, were keypunched.
- The punched cards were then edited which involves checking them for accuracy.
- The information was then filed on magnetic tapes under two major categories—(1) resident applicants and nonresident \$151 license applicants and (2) nonresidents who applied for the special \$35 antelope licenses in the event some were left over after the first category was drawn. Category one was then further divided into units as follows:

A. Applicants who did not hold a license last year

1. First area choice
2. Second area choice
3. Third area choice

B. Applicants who held a license the past year

1. First area choice
2. Second area choice
3. Third area choice

- A deck of data processing cards, each punched to describe the quota of licenses authorized in an antelope hunting district, are fed into the computer along with the tape. The computer programmer holds his breath, crosses his fingers and wipes away a tear as all appears to be well. The computer, meanwhile, makes swift random selections of the successful applicants.

(Incidentally, this is the first year that a random number generator system has been used. In the past, human choice has been involved. This year all choices were made by impartial electronic equipment designed to select in as random and impartial a fashion as possible.)

Moose, Sheep and Goat

Moose, sheep and goat applicants received different treatment. The application—on the outside of color-coded envelopes—wasn't even opened until after the drawings. Drawing procedure was as follows:

- Applications were sorted according to the species and hunting districts. (All moose applications for district 10, for example, were put together.)
- Applications were stamped with numbers in sequence.
- Cards indicating the various quotas and other information for each district were fed into a computer which randomly selected the winning numbers within the quota of each district.

- Applications bearing numbers corresponding to those chosen by the computer were hand pulled. A check was made to see if those who had drawn a moose or sheep license had taken an animal in the last seven years.

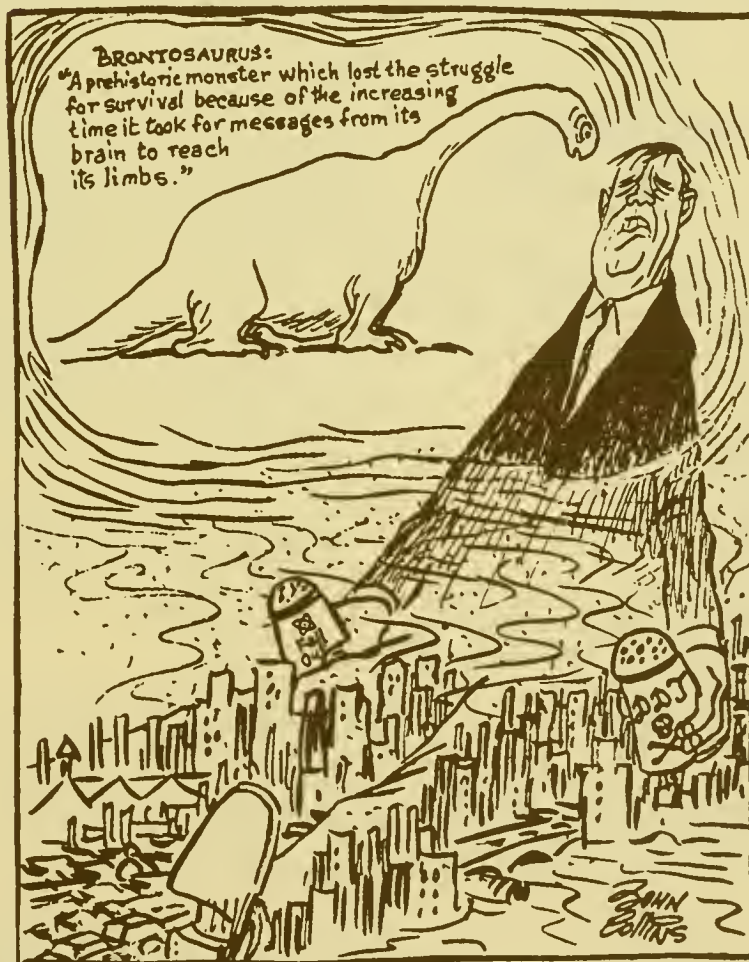
- The selected application envelopes were then opened and if the proper fee was enclosed, the license was issued.

Q. What happens to extra licenses?

A. Usually some antelope licenses are left over in southeastern districts. ("Left over" means fewer hunters applied than the quota—the number of antelope

continued

Another extinct species in the making?



from the Michigan Natural Resources Magazine

THE CATCHALL

game biologists have determined could be harvested.)

Except on very rare occasions, moose, sheep or goat quotas are filled. In 1972, for example, there were 24,753 applications for 673 available moose licenses, 6,152 applications for 72 sheep licenses and 7,855 applications for 665 goat licenses. That means applicants had a 27:1 chance of getting a moose permit, 117:1 for sheep and 85:1 for goat.

In contrast, almost 5,000 antelope licenses still remained uncalled for after 1972 drawings, nearly all in southeastern Montana hunting districts.

In order to get a desired harvest of antelope in many of the southeastern districts, it has been necessary for many years, to offer

a limited number of \$36 (\$35 plus \$1 Conservation License) non-resident antelope licenses. Resident hunters have not filled the quotas, so after drawings from nonresident \$151 and resident applications are completed, non-resident requests for special antelope licenses at \$36 each are drawn.

Even at this point, there are usually extra antelope licenses in some districts. When all successful applicants have had ample time to receive their licenses and the unsuccessful applicants have received their refunds, the remaining licenses are issued to anyone who applies (resident and nonresident) first-come, first-served until quotas are filled.

In general, that's how you received (or didn't receive) your special permit.

FREEDOM FOR THE .22

We all know that 50 million Frenchmen can't be wrong, and it seems unlikely that 73 Congress-

men could be in error by backing a single legislative movement. Fully one-sixth of the House membership recently joined Rep. Bob Sikes of Florida in cosponsoring his bills to erase the record-keeping requirement on .22 rimfire imposed by the Gun Control Act of 1968.

In introducing his bills, H.R. 5991, 5992, 5993 and 5994, Sikes noted that sportsmen and shooting goods dealers alike would welcome the removal of restrictions. The record-keeping requirement, opposed by both Treasury and Justice at the time of adoption, has proved to be an inconvenience for plinkers, target shooters and small game hunters, a constant source of harassment for businessmen and a sham as far as crime control is concerned.

The Sikes legislation is expected to draw strong support from sportsmen in all quarters of the country. Indeed, it needs such active support.—*National Shooting Sports Foundation*

wildlife shorts

On a nationwide basis, black bass, both largemouth and smallmouth, rank as the most popular fresh-water game fish.

* * *

Mountain lions keep their kittens with them for two years to teach them the skills of hunting and stalking.

* * *

Spiders can determine exactly what kind of prey have been trapped in their webs from the vibrations caused by the victim's struggles.

* * *

The only mammal that does not have the vestige of a tooth anywhere in its development is the spiny anteater of Australia.

* * *

The web spun by that lowly arachnid, black widow spider, has some special qualities that make it ideal for the cross hairs for telescopic sights.

* * *

Arctic mammals have a fat in their feet that remains soft during subzero temperatures. Locomotion would be very difficult without it.

* * *

Bobwhite quail populations undergo an annual 75 to 80 per cent mortality rate whether or not the bird is hunted.

* * *

Detailed game research has found that antelope depend on sagebrush during winter. One study discovered that 98 per cent of the antelope's winter diet was the various species of a sagebrush, mostly big sage.

* * *

The mountain lion is not an endangered species in Montana. The eastern mountain lion (the same species) is, however, very rare because almost all of the predator's natural habitat has been destroyed. In fact, the eastern cougar was thought to be totally extinct until a few observations were documented during the past few years.

* * *

Woodpeckers can stretch their tongues twice the length of their bills when procuring food.

* * *

Great horned owls lay round eggs. All other owls have oval eggs.

* * *

Indian lore has it that the coyote will be the last animal on earth.

* * *

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photo by Jon Cates

what we've learned about our most popular game animal

by Richard J. Mackie

WIDELY RECOGNIZED FOR historical significance and scenery, the Missouri River Breaks of north central Montana are also one of the more important mule deer ranges and hunting areas in Montana. Through the years—and especially recently—an apparent decline in the mule deer population has concerned persons living, working and/or hunting in the Breaks. Like elsewhere, many

believe liberal hunting seasons “caused” the decrease in deer numbers

This leads to some basic questions. What is the mule deer population trend in the Breaks? Has it declined? How has hunting affected population trends?

Some answers come from 13 years of study of one mule deer population in the Breaks. This intensive study was conducted

continued

on a 100-square-mile area about 75 miles northeast of Lewistown. The area is generally typical of most of the Breaks in deer habitat and numbers. Because of its location along U.S. Highway 191, it probably receives equal or greater hunting pressure compared with other parts of the Breaks.

Beginning in 1960, deer numbers, sex and age composition, harvest and the previous year's trend were measured. These studies were limited by the problems inherent in enumerating big game populations anywhere, including factors such as weather conditions which severely restricted field surveys in some years. However, the information seems to provide a reasonably accurate picture of changes in size of the deer herd. It also cites factors influencing real and seemingly "apparent" population changes.

POPULATION TRENDS

What has happened to the mule deer population on the Breaks study area since 1961 and probably on adjoining ranges as well? Figure 1 answers this question and also shows the number (or relative proportions) of bucks, does and fawns.

These findings indicate deer numbers were almost constantly changing, either upward or downward, between years or over

periods of several years. Only rarely was about the same number of animals present in early winter of successive years.

Generally speaking, the total population declined by about one-third between 1961 and 1967. It recovered through successive yearly increases until 1971, when approximately the same number of animals was present as at the start of the 1961 study. From 1971-1972, the population again declined by about one-third to another low in early winter of 1973. Maximum difference between any two successive years was about 20 per cent.

It should be noted that estimates were made in early winter, after the hunting season, where much of the annual mortality occurred in most years. Mid and late winter losses of fawns in 1965 and 1972 appeared to reduce population levels by nearly 20 per cent from early winter estimates.

Year-to-year increases or decreases in total numbers of mule deer correspond closely with the number of fawns produced and/or surviving each year. Numbers and proportions of adult bucks and does changed slightly (Figure 1, Table 1) and generally lagged a year behind the change in total numbers and fawns.

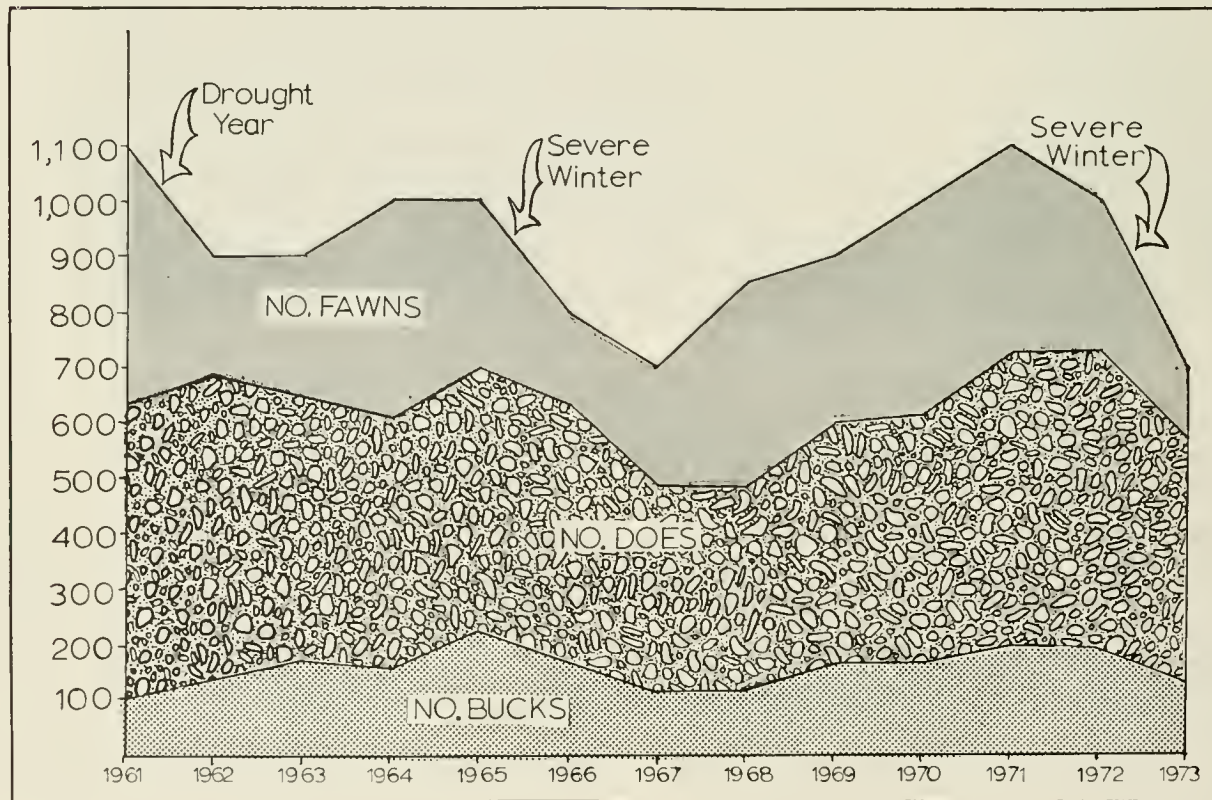


Figure 1—Year-to-year trends and relative proportion of bucks, does and fawns in early winter populations of mule deer on a 100-square-mile study area in the Missouri River Breaks, 1961-1973.

Large and growing populations were always associated with large numbers of fawns in early winter, while relatively low and decreasing populations had proportionately fewer fawns and/or suffered substantial fawn losses in late winter. When percentages of fawns and fawn/doe ratios (Table 1) in early winter populations are compared with the annual population trends shown in Figure 1, it becomes clear that increases in the deer population occur only when fawns make up more than 33 per cent of the herd. In most years, this required more than 55 fawns per 100 does. Populations decreased or changed only slightly in years when 55 fawns or less were produced per 100 does and 30 per cent or less of the population was fawns.

The one-year lag between upward or downward trends in the total population—as compared with adult bucks and does—mostly reflects addition or absence of yearlings from the previous year's fawn crop. When many yearlings were added from a large fawn population the preceding year, adult numbers increased. If few fawns were added because of poor fawn production or survival, adult numbers declined.

INFLUENCES ON FAWN PRODUCTION AND SURVIVAL

Since the "ups and downs" in total deer numbers seem to be related to the proportion of fawns added to and surviving in the population through the first winter, influences on fawn production or survival in the Breaks must control population trends as well.

Poor fawn production and decreasing deer numbers in the Breaks were associated with drought (especially spring drought) and exceptionally severe winter conditions. Good fawn production and increasing numbers occurred in years of normal or greater precipitation and relatively mild winters.

Poor fawn production during the summers of 1961 and 1962 was definitely influenced by severe drought conditions in the area from the summer of 1960 to the spring of 1962. Plants simply didn't grow very much in 1961 and early spring of 1962 and many of the forbs which deer normally depend on for food during spring and summer became extremely rare. Heavy rains in late spring and summer of 1962 came too late to do more than slightly temper effects of the drought on fawn production. The late, heavy rains did provide exceptionally favorable forage for deer from the fall of 1962 through 1963, when fawn production was high.

Spring and summer were also dry in 1965, 1971 and 1972—other years of poor fawn production. The extremely poor fawn crops in

1965 and 1972 (shown by very low fawn/doe ratios and fawn percentages in early winter classifications in 1966 and 1973) probably resulted from combined effects of previous severe winters and poor spring and early summer range conditions on fawn production.

Normally, winters are not severe in the Breaks. Snowfall is light and seldom lasts for more than a few days. So, the deer are nonmigratory and spend the entire year—and usually their lifetime—on small home ranges where they forage freely. The winters of 1964-65 and 1971-72 were exceptionally severe, harsher than any winter since 1952. Snow was more than 20 inches deep in early December and complete snow cover lasted into March on all but some steep, south-facing slopes. These conditions forced the deer from normal foraging areas. They either concentrated on steeper open slopes or foraged in small areas where food shortages rapidly developed.

Many fawns were lost during both winters. During 1971-72, the percentage of fawns in the various classifications decreased from about 27 per cent in late December to less than 10 per cent in April. Yearling males were conspicuously absent in subsequent fall and early winter field observations and sex/age classification counts during 1965-66 and 1972-73.

Like severe drought conditions, the harsh winter apparently led to decreased fawn numbers and population levels through two successive years. Winter conditions which caused fawn losses also affected the nutritional status of surviving does so that few fawns were dropped or raised through the following summer.

Hunting, even when heavy, did not seem to affect overall population trends. During the six years in which harvests were measured, deer removed from the area by hunters ranged from a high of about four deer per square mile (approximately 25 per cent of the pre hunting season population) in 1961 to less than one deer per square mile (10 per cent or less of the preseason population) in 1964 and 1965. The general decline in mule deer from 1961-1966 was paralleled by a decrease in hunters and the harvest. Similarly, increasing populations from 1967-1970 were accompanied by more hunters and more deer harvested.

These findings and observations indicate that the response of hunters to deer numbers (or "apparent" deer numbers) was much greater than the response of deer numbers to hunting.

continued



Sometimes habitat and weather conditions force mule deer to leave their normal foraging areas to seek new food supplies. When this happens, deer are more often seen and it "seems" like more deer are around. For example, these two bucks were spotted right along the road. (F&G photo)



In most cases, the status of a mule deer population can't be determined by the number of animals present (or appearing to be present) at any specific time in any year. (F&G photo)

Even intense hunting did not seem to affect mule deer population trends in this study area. (F&G photo by Tom Warren)



CASUAL OBSERVATIONS

Casual observations and travels through the study area did not always correspond to findings of intensive population surveys. Sometimes more deer appeared to be present than could actually be accounted for, while in other years, the opposite was true.

Hunters found the same thing. In some years deer were "running all over the place," while in other years "there were few deer left" or "they were all shot off."

Why did these differences exist? Differences in seasonal habitat use and activities of the deer from year to year were most important. The relative abundance of young animals in the population was also a factor. Changes in mule deer behavior and local distribution due to heavy hunting pressure were other influences.

Even between years with similar populations, great differences existed in the ease

to flourish. Normally, deer use this grass only in early spring when it is one of the first available green plants. However, since other food was scarce, the deer turned to Sandberg bluegrass and to almost exclusive feeding on open ridge tops and coulee bottoms. They abandoned their normal feeding spots in or along timbered and brushy slopes or the edges of ridge tops. Feeding periods became longer and the deer moved around more than is usual for fall, probably because of the small bulk provided by individual bluegrass plants. Thus, the deer were easily observable and extremely vulnerable in the fall of 1961.

During the following autumn (1962)—with a similar deer population—range conditions, habitat use and behavior patterns were nearly opposite. Heavy late spring and summer rains allowed widespread germination and growth of yellow sweetclover, a highly preferred deer food plant. Sweetclo-

Do periodic ups and downs in the Missouri River Breaks' mule deer numbers indicate a stable population or the beginning of a long-term decline?

with which deer could be observed and in their relative vulnerability to hunters. For example, in the fall of 1961 deer could literally be seen "all over the place."

Since that was a dry year, normal summer foods were scarce and little green forage remained by fall. Autumn rains caused Sandberg bluegrass (a frail, almost inconspicuous grass, commonly seen only on open ridge tops and coulee bottoms in the Breaks)

ver along ridge tops and coulee bottoms dried by late summer or early fall, but plants under timber or in brushy coulees remained green and available to deer. That fall, the animals were in good condition because of the forage provided by sweetclover and other plants and their movements and activity periods became very short. Because the deer fed almost exclusively in the timber and brushy coulee, they became extremely invulnerable to ob-

continued

Table 1. Sex and Age Composition of the Mule Deer Population on the Missouri Breaks Study Area During Early Winter—1961-1973.

Year	Per cent bucks	Per cent does	Per cent fawns	Per cent yearling bucks	Bucks per 100 does	Fawns per 100 does
1961	9	49	42	46	19	86
1962	15	61	24	47	25	39
1963	19	52	28	34	37	54
1964	16	46	38	47	35	84
1965	23	48	29	47	48	62
1966	21	58	20	33	37	35
1967	17	53	30	46	33	57
1968	20	40	40		50	100
1969 ¹						
1970 ²			39			
1971	19	48	33	47	39	69
1972	19	54	27	46	26	51
1973 ²			19			
Ave.	18	51	31	44	35	64

¹ No winter classifications made on study area

² Classifications after antlers shed

servation and hunters. A similar situation also occurred in the Breaks during fall, 1972, when first-year growth of sweetclover was again abundant and remained green in coulees, after a very dry spring and early summer.

In addition to availability of forage, the presence or absence of fawns and yearlings has influenced the number of deer seen on the study area in different years.

In and after years of normal or good fawn production, fawns and yearlings may comprise more than one-half the total population. They are also the age classes easiest to observe because they are less wary than older animals and move around more. The Breaks study shows that yearling bucks comprise almost one-half the buck segment of the population (Table 1) and an equal or greater proportion of the hunter harvest.

Numbers and proportions of yearlings were low in fall populations in 1962, 1965, 1966 and 1972. These were years in which few deer were seen and hunting pressures were low (or dropped rapidly after the first few days of the season). In 1962 and 1972, low numbers of fawns and yearlings in fall populations magnified the influence of range conditions on habitat use and activity patterns such that deer were rarely observed on the area during daylight hours.

A third factor influencing observability of deer (and an "apparent" population decline since 1959 or 1960) is the fact that animals in the area have become more wary. This was especially evident in yearlong observations from 1960 through spring of 1964 when the activities at first sighting were recorded for nearly 12,000 deer. The percentages of animals observed feeding decreased progressively by year, from 60 per cent in 1960-61 to less than 40 per cent in 1963-64. The percentages of animals standing alert and running progressively increased. These changes probably were associated with hunting pressures during the 1960-62 period and suggest that

(1) either the less wary animals were being selectively removed from the population or (2) the deer were becoming increasingly responsive to disturbance.

The concentration of hunters and hunting pressures along major roads and trails caused decreases in numbers of animals along sections of the two major ridges extending into the study area. This probably reflects selective removal (by hunters) of the animals whose home ranges bordered these roads. It also shows that deer from adjacent coulees, where numbers have either increased or fluctuated within population limits and trends, are using open ridges less.

INFORMATION EVALUATED

Historical information on mule deer in the Missouri River Breaks and findings over the past 13 years indicates that the status of the deer population cannot and should not be judged by either numbers that are present or appear to be present at a specific time in any year. Because these findings show only that the population declined substantially and completely recovered over a 10-year period, it is impossible to predict whether mule deer will increase or decrease on the area in the future.

Past records and information indicate that population levels in the Breaks have undergone several long-term changes since the time of settlement. Many of these changes occurred because of man's activities and, especially, the effects of his land use and management practices on the quality of the area as mule deer habitat. Mule deer numbers in the Breaks, other parts of Montana and the West apparently declined from the late 1800s to the 1920s and early 1930s. Extreme changes in deer habitats were caused during this period by widespread and intensive grazing by domestic livestock—as well as by the plows, axes and other activities of homesteaders who settled in the area.

By the 1930s, these changes had stabilized. Decreased human populations, increasingly effective law enforcement, predator control and favorable range conditions for deer probably led to the general and rapid increase in deer numbers in the Breaks from the mid-1930s through the early 1950s. The population generally remained high into the middle and late 1950s.

At this point, it is difficult to recognize if the trends seen on the study area since 1960 represent only periodic ups and downs in a generally stable population, or the beginnings of a long-term decline which may emerge—sadly but inevitably—as the amount of habitat and amount and quality of forage available to deer in the Breaks gradually decreases. 🐾

ABOUT THE AUTHOR



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by Frank Gjersing

MANAGING DUCKS AND GEESE FOR FUN AND PROFIT

a few simple changes in management plans can substantially increase



A mallard hen and her brood—products of a quality habitat. (photo by Jon Cates)

OUR ANCESTORS TRAVELING across America described "great clouds" of ducks and geese so large that "the sound made by the flushing ... was like thunder." These tremendous populations were products of millions of acres of wetlands which then dotted the land.

Then man brought "progress." Armed with federal subsidies from the Soil Conservation Service and backed by the "genius" of the Corps of Engineers, he began to drain.

This drainage of wetlands and the resulting decline in waterfowl populations is best reflected in the prairie pothole country—glacier-created ponds which cover parts of Montana, North and South Dakota, Minnesota, Alberta, Saskatchewan and Manitoba. This region includes only 10 per cent of

the continent's duck breeding range but produces more than 50 per cent of North America's ducks, and 70-80 per cent of all mallards and pintails. Today, more than 60 per cent of these wetlands have been drained, half in the last 20 years, *mainly with your money.*

For example, the Starkweather region of North Dakota, which includes more than 50,000 acres of prairie pothole wetlands, is "the best of the last" waterfowl breeding grounds in the U.S. But now the federal government in another ill-advised attempt to use more of your money, plans to drain the area so the 91 farm units located there can grow more crops. To that, it's easy to say, "With food prices the way they are now, we sure could use more crops." But after examining the facts, the fed-

continued

waterfowl production in eastern Montana—and give the economy a boost as well



Canada geese—a popular waterfowl species in eastern Montana. (F&G photo by Hector LaCasse)

eral government appears two-faced.

In 1971, the Department of Agriculture paid \$2.75 billion to let 37 million acres of surplus crop land lie idle. (The amount increased to 62 million acres by 1972.) Even after paying farmers to let crop lands lie idle, this nation still has millions of bushels of surplus grain each year.

Draining wetlands to add to the surpluses we already have merely defeats the purpose and adds to the problem. You, the taxpayer, pay for all this, but the real loser is wildlife. Ironically, the federal government with one hand pays to keep land idle. But with the other hand, it pays to bring more land into production.

WATERFOWLING—BIG BUSINESS

The National Survey of Fishing and Hunting shows that during 1970, 2,894,000 waterfowl hunt-

ers spent \$244,451,000 in pursuit of their sport—about \$84 each. The majority of this went for transportation, food, lodging and supplies.

In Montana more waterfowl are shot each year than prairie grouse, forest grouse or exotic game birds (i.e. ring-necked pheasants, chukar or partridges). Obviously, any decline in waterfowl habitat can seriously hurt many businesses and recreation opportunities as well.

Wetlands aren't, of course, restricted to waterfowl production. They provide habitat for deer, pheasants, muskrats and many other game and nongame animals. A few even have some fishing. So, although impossible to state in dollars and cents, the loss of wetlands has a far-reaching impact on our recreation-based economy—much more than one would believe, at first glance.



The "great clouds" of ducks our ancestors saw probably will never return, but present waterfowl numbers can still be substantially increased with proper land management. (F&G photo by Roger Flieger)

SOLUTIONS

What is being done? What can we expect for our waterfowl in the future?

Through duck stamps, license sales and contributions, many wetlands have been purchased or leased by various groups and agencies in the United States and Canada. Although these programs definitely benefit waterfowl and should continue, habitat losses still outweigh gains.

Methods of improving waterfowl habitat, other than actually purchasing or leasing the land, exist, however. On the vast range lands of the western U.S., millions of public dollars have gone to develop stock water reservoirs. Thousands of these ponds have been constructed by federal and state agencies and private individuals in eastern Montana. Although not as numerous as the prairie potholes once were,

these areas now contribute significantly to waterfowl numbers.

Through research conducted by the Montana Department of Fish and Game, Montana State University and the Bureau of Land Management, much has been learned about waterfowl production on stock ponds and surrounding lands. Based on these findings, guidelines for management now exist which—if followed—will increase waterfowl production even more.

Dabbling ducks (ducks which feed in shallow water and include the mallards, pintails and teal) and Canada geese are the most important and abundant waterfowl produced on stock ponds. The most important limiting factor (besides the water itself) is nesting vegetation. Canada geese and most dabbling ducks prefer to nest in upland vegetation a-

continued



Canada goose goslings still in the nest. Canada geese and dabbling ducks (mallards, pintails and teal) are the major species produced on eastern Montana stock ponds. (photo by Jack Jones)

round the pond or on islands. Intensive livestock grazing eliminates most nesting vegetation, which in turn means fewer ducks and geese.

IMPROVED GRAZING PROCEDURES

A rest-rotation grazing program recently initiated by the Bureau of Land Management may solve some of the problems. This system tailors grazing to the needs of plants and allows one pasture of a series to completely rest from grazing each year. This allows old plants to recover vigor and produce new seeds and new seedlings to establish. Each year, a different pasture within the system is "rested."

A recently completed study in Phillips County showed that waterfowl on one rest-rotation unit increased more than 100 per cent over a three-year period, while production on "normally" grazed areas remained fairly stable. This increase in waterfowl resulted from a substantial increase in nesting vegetation. Since some species of waterfowl

begin to nest before new growth provides adequate cover, presence of residual cover from the previous year is extremely important. Most residual cover occurred in pastures completely rested the previous year and in those grazed only during spring and early summer of the previous year, thus allowing regrowth of vegetation in summer and fall.

Increases in waterfowl production usually oc-

ABOUT THE AUTHOR



Frank Gjersing is an area game biologist for the department in Havre. He received bachelor of science and master of science degrees in fish and wildlife management from Montana State University, Bozeman.



A stock pond before any meaningful management plan was implemented. Notice that domestic livestock have essentially stripped all nesting cover from around the pond. (F&G photo by Frank Gjersing)

curred following these types of grazing. Decreases in waterfowl production usually occurred when late summer and fall grazing resulted in little, if any, vegetation the following year.

Fencing a reservoir to prevent livestock grazing and allow nesting cover to develop has been tried. Although nesting cover does develop, cost of building and maintaining the fences is high and seems to outweigh the benefits.

Another method that holds a great deal of promise is construction of islands on these stock water reservoirs. Islands can be constructed by pushing up mounds of dirt in shallow areas, cutting off peninsulas or building up natural knolls. Many islands have been constructed in this manner by the Montana Department of Fish and Game on waterfowl management areas and by the Bureau of Land Management on stock ponds. Islands usually vegetate within a short time and remain vegetated un-

less low water allows access and grazing by livestock. Research shows geese prefer islands as nesting sites and nesting success is much higher on islands than on the mainland. Islands are inexpensive to create and require little, if any, maintenance. Construction of islands on stock ponds whenever possible will continue to expand waterfowl populations.

Based on these findings, grazing managers can design management plans to benefit not only plants and livestock, but waterfowl as well.

Many factors affect waterfowl populations but none as greatly as the breeding and nesting habitat. Waterfowl populations reflect the quantity and quality of their breeding and nesting habitat. Public administrators in charge of reservoir construction and grazing lands are now in a unique position to use multiple use management to benefit wildlife, livestock and the land itself. 🐾



The same pond after one year of rest. Notice the abundance of nesting vegetation—one key to increased waterfowl numbers in eastern Montana. (F&G photo by Frank Gjersing)



IS OUR HUNTING FUTURE BEHIND US ?

guest editorial by J. George Hummel, illustrated by Vern Croig

Montana is experiencing the greatest land boom in its history. From the Idaho border to Canada and the Dakotas, developers are turning key wildlife areas and the banks of trout streams into homesites. Swamplands are being drained and filled, and buyers from California, Texas and Colorado are closing deals for large tracts of land. Even European and Asian capital is being invested in Montana land, as well as in lands in other western states. Big game wintering areas, and farm and bottom lands which have supported pheasants and migratory waterfowl are being subdivided and sold almost before the ink is dry on the plat.

The Montana State Board of Real Estate tells us: "Since the calendar year 1971, the number of applications for real estate examinations has increased over 300 %. During 1971, the average number tested bimonthly was 80 applicants. At the March 19, 1973 examination, 250 applicants were tested. This is not a seasonal fluctuation, but an established trend." The Board then goes on to announce monthly examinations which will be limited to 200 applicants—2,400 per year!

On May 23, 1971, *The Missoulian* published a "land" supplement in which the following choice

bits appeared: "The Bitterroot Valley is being subdivided and sold. Last year alone, Ravalli County recorded around \$12 million in land sales. But the actual figure is probably higher.

"A land rush is on in one of the last of the wide open spaces, the Rocky Mountain states. In the vast tracts of largely empty territory...speculators are grabbing the scenic mountain areas, riverbank property, land outside the booming western cities and even marginal desert land.

"South of Great Falls, a ranch which once belonged to actor Gary Cooper has been subdivided into plots selling from \$350 to \$600 an acre. 'We're moving it just as fast as two guys can sell it,' said Earl E. Smith, part owner of Montana Lands Inc. 'The people are waiting in line.'

"Eastern Montana, around the Miles City area, is experiencing a large influx of corporate ranching concerns from Colorado and Texas.

"In the Missoula area, the Nine Mile region is currently a hot spot for land sales. Ranch owners are subdividing into smaller acreages for homesites.

"There are places along the Swan River, Clark Fork, Blackfoot and Bitterroot which are selling on a footage basis. Even creeks, such as Rock Creek (east of Missoula) are beginning to be sold by the foot."

One developer states: "Our own company has decided that instead of fighting the environmentalists on a blind basis, we are going to learn all we can about ecology as rapidly as possible. Being aware is necessary if we are to move with, or ahead of, public concern.

"At the 95-year-old Madison County Courthouse in Virginia City, Clifford J. "Bud" Ehlers of the reclassification office went through records for 250,000 acres in the Madison Valley near Ennis. Ten or fifteen years ago, he said, there were 60 different families living on ranches on that land. Now 80 per cent of the land belongs to half a dozen owners from California, New York, Illinois, Indiana and Wisconsin."

More recently, Dennis Curran of the Missoulian State Bureau writes: "In increasing numbers, Montanans are discovering they can share in a new kind of old style 'family farm.' It's the 'ranchette' and it's cropping up with increasing frequency in the Mountain West these days, especially on the outskirts of rapidly growing cities like Bozeman and in popular recreation areas like Gallatin County. Acreages vary from five acres on up to a quarter section, but most common is the 10-acre tract....Bozeman's city-county planner,

Rick Mayfield, says he has counted 200 of the 10-acre tracts and knows many others have not been recorded. They're selling for \$1,000 to \$1,500 an acre, he says.

"For those who buy them, it's a scenic and wholesome way to get away from the hustle and bustle of a city even the size of Bozeman and discover the tranquil solitude of country living at its finest....But for planners and commercial agriculture, the ranchette is a headache, a threat and maybe even a disaster." Curran goes on to quote Dr. Erhardt Hehn, a Montana State University soils professor: "People have to live somewhere, I'll grant you that, but this is so costly. The ranchette is the fastest possible way to destroy commercial agriculture....To me, the 10-acre ranchette is the worst possible land use."

Surely we might add that such land use would appear to be one of the fastest possible ways to destroy wildlife and wildlife habitat. Most certainly the new land uses cited above are bound to seriously affect the future of Montana hunting.

The April 21, 1972 issue of GUN WEEK reported on the Oregon controversy concerning the leasing of private hunting lands by a New-York-based firm known as "Adventures Unlimited." Memberships sold to Oregon sportsmen cost \$200 per year, plus a \$700 initiation fee, and the head of the operation was quoted as saying that, "in the future similar groups may be established in other states." Do you suppose we could hide Montana?

Surely it must be apparent by now that the era of hunting on private lands—the traditional "free" hunting in Montana—is rapidly drawing to a crisis. We in western Montana are more fortunate than our eastern Montana cousins, for we have more public lands available to us for big game hunting, at least for as long as we are able to preserve the wintering habitat. But what of the game found in privately owned, bottom land river courses—the ducks, geese and the pheasants which until now have provided much fine outdoor recreation? Will we in Montana soon be facing conditions now prevalent in the eastern United States, where the man of average or low income has been largely eliminated from hunting as a recreation?

Fortunately, there is still a way out for Montana sportsmen. At least a partial solution lies in an accelerated program of acquisition, development and maintenance of key wildlife areas by the sportsman, with the sportsman's money, for the sportsman's use and pleasure. This can be accomplished through relatively small increases in

continued

"Will ... Montana soon be facing conditions now prevalent in the eastern United States, where the man of average or low income has been largely eliminated from hunting as a recreation?"

Would we “prefer to see those key [wildlife] areas in the hands of out-of-state clubs or hunting preserve operators rather than in the ownership of our own Montana sportsmen?”

license fees. The Montana Department of Fish and Game is ready and willing to acquire, develop and manage the lands, but initiation of the action must come from grass-roots demand of the sportsmen of the State.

The Western Montana Fish and Game Association plans to introduce into the 1974 Montana State Legislature a bill which would:

(1) Increase resident hunting fees as follows:
Elk tag—from \$3 to \$10; Deer A—from \$3 to \$7;
Deer B—from \$5 to \$7; Black bear—from \$5 to \$6;
Bird—from \$2 to \$4.

(2) Require that revenue from these increases be designated for acquisition, development and maintenance of key wildlife areas.

These fees would bring the license schedule to realistic levels, and to roughly equal levels with other western states. As an example, elk license fees in Wyoming, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, Washington and Arizona range from \$3 in Idaho to \$20 in Arizona, with an average cost of \$12. Total “package” average (elk, one deer, bear and bird) for these western states is \$27.68 as compared to Montana’s proposed \$27.

The Association’s bill would generate an appreciable revenue total. Using license sales figures of May 1, 1972, to April 30, 1973, (Elk—74,916; Deer A—126,384; Deer B—34,976; Bear—4,263; Bird—57,487) the requested increases in fees would total \$1,219,137 annually. With equal federal matching funds \$2,438,274 would be available for acquisition, development and maintenance.

The following points should be emphasized in the interest of clarification of the proposal:

- The increases will be earmarked for the purchase, development and maintenance of key wildlife areas and not for increased personnel in the Department of Fish and Game.
- Lands to be acquired will be purchased in the open market with no condemnation to be involved.
- Fees in lieu of taxes would, as usual, be paid on lands so acquired.
- Acquisition would include critical big game winter range, and bottom lands and uplands for development and management as waterfowl and upland bird areas.
- Purchase of some areas on long-term contract should be explored because some landowners want

to sell over long periods of time for tax purposes.

To those who may be unreceptive to further land ownership by public agencies, it might be pointed out that the Montana Department of Fish and Game now owns less than one quarter of one per cent of Montana. Might we not ask ourselves if we would prefer to see these key areas in the hands of out-of-state clubs or hunting preserve operators rather than in the ownership of our own Montana sportsmen? And for those who may feel that the proposal will place the license fees too high, it might be noted that a 1970 national survey of hunting costs by the Bureau of Sport Fisheries and Wildlife reveals that the cost of hunting licenses, when viewed in terms of the total cost of hunting, is almost insignificant—in the neighborhood of three to five per cent!

The Western Montana Fish and Game Association has undertaken a rigorous campaign to point out the advantages of the proposal to the sportsmen of the State between now and the convening of the 1974 Legislature. It is hoped that widespread support from sportsmen’s clubs and conservation groups will develop, for the proposal will not succeed without it. The first significant success was gained on June 10, 1973, when the Montana State Wildlife Federation, at its convention in Billings, passed a resolution supporting the proposal. In general, reaction from sportsmen has been favorable, but the task will not be an easy one. Traditionally, the Montana sportsman has fought any increase in fees, and the Montana legislator is reluctant to oppose him. But the sportsman must now come face to face with the times and need, realizing his responsibility to future generations. The impetus must come from the grass-roots, and if the sportsman insists, the legislator will follow. There is yet time. Much land suitable for acquisition and development is still available, but it is rapidly depleting, and time is not on our side. 🐾

(J. George Hummel is chairman of the bird committee for the Western Montana Fish and Game Association, based in Missoula. He is also past president of that organization, chairman of the Missoula area chapter of Ducks Unlimited and member of Trout Unlimited and the National Wildlife Federation.—Ed.)

In the family of American wildlife, the game animal is the rich uncle. It is studied, managed, and greatly valued by professional conservationists and sportsmen. Millions are spent each year on the management and hunting of deer, waterfowl, pheasants, quail, rabbits, and other game species.

Then there are the poor relatives: the nongame species.

They are no less beautiful or unique than the game species, nor less worthy of our concern. But because they are not hunted, they are not the objects of intense, hunter-sponsored conservation programs. As Dr. Joe Linduska once wrote:

"It is said that the bluebird is declining in numbers and is in trouble. That is a sad state of affairs, but it would probably not be so if the bluebird weighed three pounds and held well to a pointing dog..."

If that bluebird, or any other nongame wildlife, is in trouble it's not for lack of protection. Nearly all songbirds are protected by state and federal law. But while a bird may be protected from shooting, it's not protected from our technology. And to many wildlife species, the bulldozer, dragline and intensive farming are deadlier than bullets.

Protection is needed, of course. Even heavily hunted wildlife is protected—by closed seasons, bag limits, shooting hours, prescribed methods of take, and refuge areas. But protection alone won't do the job. By itself, it is generally a hands-off, do-nothing approach. The best protection for any wildlife species is positive management.

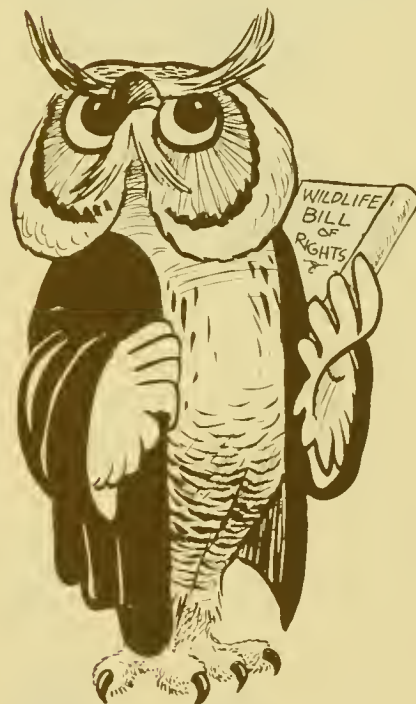
This has been proven with our major game species. We have learned a great deal about their biology, what makes them fail or flourish, and how to manage them as well as possible. There are gifted wildlife biologists who spend their entire careers studying a single game species and its environment.

Compared to pheasants and quail, we know practically nothing about orioles and bluebirds. And we debase ourselves and our world by saying: "So what? Bluebirds and orioles have no economic value..."

To anyone who loves nature in its completeness, it would be a dreary world with no wildlife but game species: no eagles, ospreys or hawks; no gulls or pelicans; no bobolinks, warblers, prairie dogs, kit foxes, coyotes, grebes, bitterns or flying squirrels, to say nothing of such desperately rare creatures as the lordly whooping crane, California condor, and peregrine falcon. And today, with man's heavy hand felt through all nature, it's time that we gave such creatures some of the priority attention that has been largely reserved for game animals and birds. We must broaden wildlife conservation to include all species of wildlife—not just the favored few.

continued

A LAW FOR WILDLIFE



by John Madson and Ed Kozicky,
Conservation Department,
Winchester-Western

illustrated by Ozz Warbach

Most Americans will never hunt, nor visit our great game ranges and see our most spectacular wildlife species. But that doesn't mean that they should be denied a chance to share in America's wildlife splendor. The chance to enjoy quality wildlife in quality natural surroundings is an American birthright—and a considerable part of the American dream.

Conservation of nongame wildlife has special meaning because it is everyday wildlife. It includes species that are adaptable to cities and suburbs if given half a chance: many songbirds, small hawks and owls, and such small game species as quail, cottontail rabbits, and tree squirrels. All are animals that can be enjoyed in the back yard, at the birdfeeder, or in local parks and public gardens.

Another thing: if there's one lesson learned from a half-century of game management, it's that quality wildlife is the truest indicator of quality natural environment. You won't see a Baltimore oriole or an indigo bunting in the slums of the Inner City; such habitat is occupied by house sparrows, rats and starlings. Orioles and indigo buntings are fussy about environment. They are originals, and they demand something of original quality where they live. And as they are biological indicators of quality in their world, so they also indicate quality in ours. If there are fewer songbirds in our suburbs today, it's because the environment for birds has been degraded there—as well as the environment for children.

Millions of Americans know this, and long to be part of a movement to prevent it. But they have always lacked ways and means to do so. They do not wish to buy hunting and fishing licenses that they will never use, and why should they? Besides, their main interest may be in nongame wildlife, not game species. Yet, there is no way for the average, nonhunting citizen to engage in general wildlife conservation programs.

This has concerned game managers and biologists for a long time—and that concern has now jelled. Through the International Association of Game, Fish and Conservation Commissioners, and The Wildlife Society, the following model law for nongame wildlife conservation has been developed. Carefully designed by conservation administrators and legal counsels in the field, it is a workable, practical blueprint for expanding a state's game management efforts into nongame wildlife conservation.

The adoption of such a program could have repercussions all through the citizen environment—not only giving the average man a real piece of the conservation action, but providing a launching pad for a whole new system of environmental involvement.

No one method of funding this nongame wildlife and endangered species act will fit all states. However, it is widely agreed that funding must come from sources other than fish and game funds. Historically, this concept was part of the American Game



Policy of 1930, a landmark in American conservation that recognized the nonshooting protectionist and the scientist "as sharing with the sportsman and landowner the responsibility for wildlife conservation, with public funds from general taxation to better wildlife as a whole and the sportsman paying for all betterments serving game alone."

In what ways can those "public funds" be provided?

Four approaches to funding the management of nongame wildlife and endangered species have been proposed during the drafting of the model law:

1. *The state legislature to allocate, from the general fund, an appropriation related to a set percentage of the annual collection of fish and game funds.*

Such an allocation would emphasize the need for cooperation in wildlife conservation and help unite the hunting and nonhunting publics in a common venture.

2. *An annual appropriation from the general fund provided by a small per capita tax based on the number of residents within the state.*

Such an appropriation would escalate with the population increase and provide more monies as fish and game resources face the mounting pressures of a rising human population. As such population rises, so does the need for intensive management of all wildlife species. This appropriation would not be measured as a percentage of fishing and hunting license revenue—which may be expected to decrease with large increases in population.

3. *A special tax on specific luxuries.*

As an example, the State of Missouri is trying to obtain funds to expand its conservation program through a tax on soft drinks. This is one of the few luxuries in life not now taxed, and the consumption of soft drinks would increase with the growing population and the number of tourists.

4. *Grants, gifts and bequests from private sources.*

This type of funding should be encouraged, and ways and means found to make it tax-deductible.

Once passed, an Act for Wildlife could be quickly put into gear. The basic, highly refined techniques of game management can be effectively applied to the problems of nongame wildlife conservation. Manning the program with premium talent is no problem: there is a corps of trained wildlife managers and biologists available—young, concerned, and desperately eager to help put such programs into action.

So all the elements for effective action exist: a critical public need, the techniques, knowledge, and trained men and women to meet that need, and equitable ways to provide the necessary funding. 🐾



going . . . going . . . gone?

Anyone interested in pursuing the suggested legislative action can obtain a copy of the model law by writing the Conservation Department, Winchester-Western Division, Olin Corporation, East Alton, IL 62024.



CLASSROOM CONSERVATION

BASIC CONSERVATION FOR THE YOUNG CONSERVATIONIST

Earth Day Contest Results

“And another thing, we are just as important as you are.”

Dear Mr. Crisafulli:

If you build Allen Spur Dam, you will ruin the beautiful land and destroy a lot of fish and wildlife.

If that dumb dam would be built, I would not be able to do the hunting or fishing that I enjoy so much.

How would you like it if a man came to your house and told you to move out? Why don't you leave us alone? We aren't a "thimbleful in a tub" like [you said] in your letter in the *Billings Gazette*.

We are young and this world will soon be ours. We want something that will still be worth looking at. This environment will soon be ours too, so leave us something that can be used as a recreational area. Leave us someplace to hunt and fish on.

It is just a big waste of money after all the years of work.

No one will buy your pumps.

You should know there's a lot more recreation here now than there will be if it's covered up with water.

I'm a student from Rosedale School in Paradise Valley. If the dam was built, it would flood the school and I couldn't go to school.

If that dam was built, it would ruin my life.

The big cities don't have to use our power, they can find someone else's power, instead of destroying our beautiful land.

There aren't many natural recreation areas left and if you flooded Paradise Valley that would make one less.

And another thing, we are just as important as you are.

Yours truly,
The students of Rosedale School

P.S. I'm a potential voter!!!

THE ABOVE ARE brief portions of letters sent to Frank Crisafulli, Glendive businessman and pump salesman, who strongly supports the Allen Spur Dam on the upper Yellowstone River, near Livingston. The letter writers are 14 students from Rosedale School (a small country school) in the

Paradise Valley, the area that would be flooded by the resulting reservoir.

And, these 14 students (listed on the next page) are also winners of the first annual MONTANA OUTDOORS Earth Day contest. Montanans should feel very secure, knowing the next genera-

Students of Rosedale School, winners of the first annual Earth Day contest:

Brad Hobson	Debbie Skattum	Sarah Warfield	Ileen Kelstrup	Danny Skattum
Catherine Zogbaum	Gina Hayes	Martin Kelstrup	Laurie Hayes	Keva Sue Ward
Jonathan Kelstrup	Mary Jean Gibson	Patsy Fuller	Joel Hobson	

tion is so concerned about the total environment and the forces endangering it.

The above wisdom represents only a part of what the students of the Rosedale School displayed under the direction of a young teacher, Mrs. Becky Douglass. They also wrote many legislators, the Federal Power Commission, Sen. Lee Metcalf, Gov. Thomas Judge and other high officials on subjects such as strip mining, water development, wild rivers, power plants and other far-reaching environmental issues. (REMEMBER: These students are fifth through eighth graders.) During the 43rd Legislature, they obtained actual copies of pending bills and studied them. They also collected information on many environmental issues and discussed them in classes and during a visit to the Legislature.

However, our choice was very difficult. Other entries also showed genuine concern for their natural surroundings and our fish and wildlife.

For example, Cindy Gladwin, Bonner student especially concerned with the loss of wildlife, expressed herself better than most adults ever will. She said, "Death is a big word, but it only has five letters."

Wondering about man's alteration of natural streams, a Bitterroot Valley student asked, "Look

at the water running over the cement blocks. Do you think fish can live here?"

And there was much more—recycling drives, anti-litter campaigns, circulation of petitions, writing to companies and commenting on poor environmental philosophies expressed by their products, making Mother's Day gifts from reusable materials and studying major issues such as clearcutting, strip mining and energy.

We didn't receive as many entries as we expected. But we were totally impressed with those who entered. Hopefully, this means a slow start to a popular future competition. We're sure many schools have admirable environmental education programs and special Earth Day projects, but didn't enter our contest. Perhaps many weren't aware of it. But, of course, actually "doing something" about environmental degradation is much more important than entering any contest or winning any prize. (Each of these students received an official letter of congratulations from Wes Woodgerd, director of the Montana Department of Fish and Game, and a free subscription to MONTANA OUTDOORS.)

Next year we plan to sponsor the same contest, so watch future issues for announcements.—

MO staff 

mule or whitetail?

Montana has two species of deer—mule (*Odocoileus hemionus*) and whitetail (*Odocoileus virginianus*). Lewis and Clark so named the mule deer because its ears resembled those of mules used in pack trains. Whitetail deer became "whitetails" because of their white tails. Mule and whitetail are similar, but it's not difficult to tell one from the other.

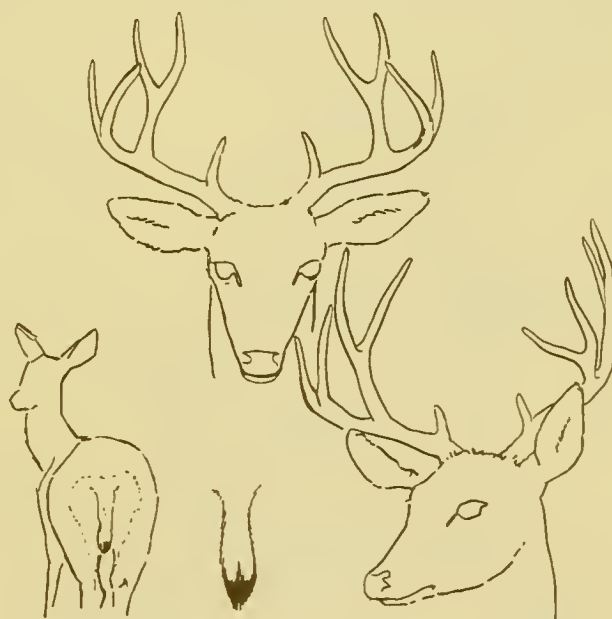
Mule deer often have large, heavy antlers. The main beam splits into two branches, each of which usually then splits into two or more. (Biologists call this "dichotomous branching.") After the antlers have split twice, the mule deer usually has four "points" on each antler.

The main beam of the whitetail's antlers never splits. All points grow out from this main beam.

Both the mule and whitetail antler have a "brow tine"—a short point that sticks straight up. However, whitetail brow tines are much longer and more noticeable.

Sometimes young bucks who have only a "spike" (one point) or a "fork-horn" (two points) have very similar antlers. If this happens, hunters must rely on other characteristics to identify the

continued



mule

deer. Older bucks—with three or more points—can usually be identified easily by their antlers.

Antlers can't always be used to identify deer. Does (female deer) don't have antlers. Bucks lose their antlers once each year, usually during late winter months. In such cases, a close look at the tail will reveal the deer's identity.

The whitetail deer's tail is white, but only on the lower side. The top is brown, and the tail itself is quite bushy and about seven to ten inches long. When alarmed, a whitetail bounds off with its tail straight up and waves it back and forth like a white flag. Whitetail deer can also put their tails between their legs, hiding all of the white color and making them very difficult to see.

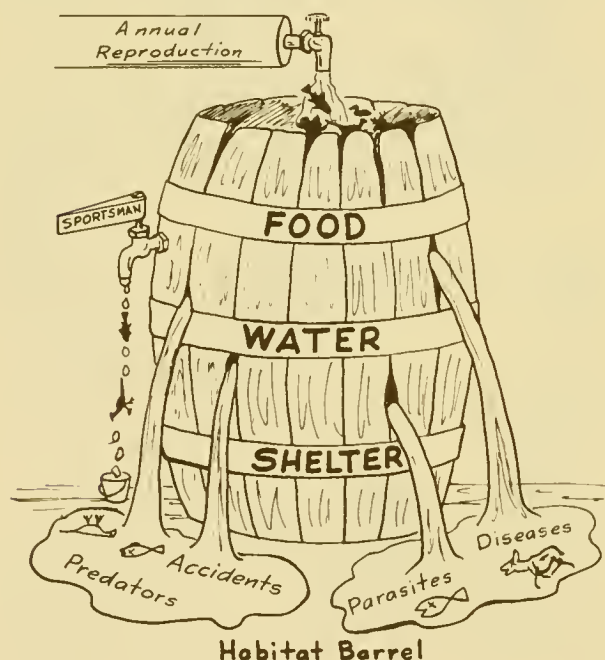
The mule deer's tail is stubby, off-white with a black tip and about two or three inches long. Hair on the underside of the tail often wears off. Mule deer cannot hide their tails like the whitetail can. Many times the only part of the mule deer's body seen by the hunter is the white hair on the rump.—Marty Beatty 



whitetail

The Habitat Barrel

Habitat (places where animals live) is like an old wooden barrel. Forests, meadows, fields, deserts, streams and all other habitats must provide enough food, water and shelter for wildlife. The barrel (a forest, field or whatever) must have all three "bands"—food, water and shelter—intact if it is to hold anything placed in it. Otherwise, it would collapse.



In the spring and summer, animals reproduce and "fill" the barrel (the habitat). In almost every year, the barrel has as many animals as it can possibly hold. Or, in other words, as many animals as the habitat can support.

Not all these animals stay in the barrel, however. Predators, disease, accidents and other factors allow some wildlife to "leak" out.

Sometimes, usually during winter, the amount or quality of these basic needs—food, water and shelter—available to wildlife shrinks. And, animal numbers do likewise. In effect, the entire barrel shrinks because the amount or quality of the habitat decreases.

Since there is less room (habitat) in the barrel, some wildlife dies. Before nature takes its toll with malnutrition, starvation and disease, sportsmen remove some of these "extra" animals—those that will no longer "fit" in the barrel. This helps balance the wildlife numbers with the capacity of the barrel (the habitat). But, in the end, nature eliminates the remaining surplus.

Seasons and bag limits determine when the sportsman's faucet will operate and how many animals it will drain out of the barrel. Animals taken by sportsmen are used for food, clothing and other things.

Finding ways to protect the barrel so it will continue to hold wildlife is a real chore for wildlife managers. Things like removing sagebrush so the land will produce more grass for man's livestock and destroying a natural stream channel so we can

continued

have a new highway, reduce the size of the barrel (habitat) so it doesn't hold as much wildlife.

Everybody wants more wildlife. But stocking animals or fish in an already full barrel just doesn't work. The barrel can hold only a certain number of animals. The surplus must go, either to sportsmen during hunting seasons, or wastefully to starvation or disease.

So, the real story of the old wooden barrel (and of wildlife management in Montana) is protecting it so it continues to provide the things—the food, water and shelter—that wildlife need. If we can do this, then we will continue to have wildlife.

(The illustration and some of the material in this article came from the OREGON STATE GAME COMMISSION BULLETIN.) 



GREAT NEWS

•This letter was originally published in the *Billings Gazette*, but we thought it deserved another printing.—Ed.

Well, the news from Helena is really great—never thought it would happen but I see that you Montanans have decided to go ahead and build the Colstrip power plant. All that talk really had us worried out here in Seattle but you people came through in fine style.

It's good to know that people really do care. And anyway—Montana's such a big state you won't even notice the stripping (actually I've never thought stripping would do much to change all that dry, brown, scrubby country anyway); and 8,000 gallons of water a minute—why that water's just going to waste now—might as well do something with it.

You'll really have something when it's all finished—700 megawatts of power and jobs for 118 people—who ever would have thought 118 people could do all that—might even take less in a few years.

Sure there may be some long-term effects but they'll be “subtle”—like in the air—and aesthetics, and flora, and fauna—well, we sure are glad you folks didn't get confused by all those big words.

You can just thank your government

for that—after all it takes big men to stand up and do what they know is right—especially when 2,000 people told them they were wrong.

Well, I'm sorry to have run on so long but I did want to let you know how much all of us over here appreciate what you're going to do for us.

You did give us a couple of bad moments—why, there was even talk that office buildings would be dark at 3 a.m., that gas stations wouldn't glow all night anymore, that vacant parking lots wouldn't sparkle in the night, that stores would have to stop using those pretty big searchlights to tell everybody to get in their cars and come to the big sales and that all those really great signs that tell about cars, and gas, and beer, and cigarettes and stores and everything would have to be turned off at night.

We sure are glad that that was all a lie. Why, now we'll just be able to keep going along the same way as always.

And all because you people were smart enough to see that when it comes to keeping the lights on in Seattle nothing else counts—not a few thousand acres, not billions of gallons of water, not aesthetics, not flora, not fauna.

Not, I guess, Montana.

J.B. Messer
Seattle, WA

CARDINAL PETROLEUM'S CLAIM DISPUTED

After reading “The Energy Crisis: Two Opposing Views” in the July/August 1973 issue of MONTANA OUTDOORS, I feel your readers should be aware of Cardinal Petroleum's interest in coal development in Montana and Wyoming.

Although Cardinal apparently does not possess coal leases, it does appear to have more than just an altruistic interest in our well-being. Cardinal is the contractual owner of an annual appropriation of 50,000

acre feet of water from the Big Horn reservoir. This appropriation is significant and approximates about eight per cent of the total water available from the reservoir. I think we all realize that water is necessary for conversion of coal to electricity or natural gas. Thus an investor or company can play the “coal game” with water instead of coal leases.

The omission of this important fact might explain to some extent the reason that the public doesn't heed industry's effort to inform us.

Donald W. Allen, Director
Beartooth Chapter, Trout Unlimited
Billings, Mt

LIKES MAGAZINE AND FISHING

I read your sample copy of MONTANA OUTDOORS and I must say it is the finest I have seen. Your department is doing an outstanding public relations job. I have fished in Montana for several years and have to admit that I have not bought a Colorado fishing license in quite a while.

I will do anything in my power to help keep your state tops in trout fishing. Our annual trip to the Madison is the highlight of each year.

Thanks for all the department's efforts to provide the great fishing that we enjoy so much.

Vern G. Gingerich
Rifle, CO

ACQUISITION

I am especially interested in the article on page one of the May/June 1973 issue in which Mr. Woodgerd discusses a program for acquisition of land to provide more fishing access and wildlife protection.

It would be very stimulating and
continued

Next Time

Watch for these features in the November/December MONTANA OUTDOORS

- | | |
|----------------------------------|-----------------------|
| —Montana owls | —antelope management |
| —clearcutting and wildlife | —what parents should |
| —a “natural” Christmas | know when their child |
| —the facts on bucks only seasons | asks for a gun |

would surely bolster confidence if the public could be assured this was more than just an academic dream. A specific initial program for such acquisition should be presented for both classes of acquisition. Future stages of planned acquisition should also be listed.

Howard C. Snyder
Livingston, MT



BIRD BEHAVIOR by John Sparks, Grosset and Dunlap, New York, 1970, 159 pages, \$3.95.

"The edible nests of some swiftlets (the source of bird's nest soup) are composed almost entirely of saliva, and take up to forty days to build." In this passage, ornithologist John Sparks captures the spirit of adventure and zest for discovery that mark *Bird Behavior*.

For years, bird behavior has been a thorny subject, and its interpretation and logical treatment have caused ornithologists difficulty. For the layman, the complex subject of bird behavior presents many paradoxes. The author writes in reasonably concise, straightforward terms and artfully conveys to the reader that birds have an unusually rich variety of behavioral patterns.

Sparks uses many descriptive examples to explain that behavior in birds, as in all animals, is directed toward self and racial survival. Many full-color illustrations—290—aid the reader's understanding of behavioral patterns. The author points out that such patterns are internally directed systems of activities which strive to maintain the physiological stability of the body in the face of environmental hazards such as heat and cold, sun and rain, competition, predators and parasites.

The aim of this book is to present the basic facts of bird behavior. A second focus is to arouse in the reader a lasting enthusiasm for birds and the wonderful things they do. If the first goal is attained, reaching the second should be insured by the facts themselves. The facts make an interesting story when they are related to the live, throbbing birds and their problems of existence.—Ken Walcheck

EDIBLE WILD PLANTS OF NORTH CENTRAL MONTANA, by L.W. Hagenner and A.R. Hagenner, Havre, Mont., 1973, 32 pages, no price listed.

In a brief introduction to *Edible Wild*

Plants, the authors point out that plants have not lost their beauty or usefulness, but man apparently has lost his desire to observe the living things around him. The Hagenners describe the beauty and usefulness of more than 40 plants native to north central Montana, including mushrooms.

The most interesting sections of this little book are the uses given for some of the edible plants. Did you know, for example, that young shoots of cattails can be peeled and eaten raw, or added to salad? (They taste like cucumbers.) Young horsetail heads can be boiled like asparagus, June berries (service berries) spice up wild game stuffing and the box elder tree provides a syrup much like maple.

Although a glossary and listing of additional sources is helpful, more information on each plant would be useful. However, if you are already familiar with edible plants in the wild—but don't know what to do with them—this book gives some valuable and fun-to-read hints.—Kay Morton

BOOKS RECEIVED —reviewed in brief—

INTRODUCTION TO BACKPACKING by Robert Colwell, Stackpole Books, Harrisburg, PA, 1970, 191 pages, \$5.95.

The author says, "No one should hesitate to take that first trip," and then goes on to explain the essentials of backpacking. He gives details on equipment and conditioning and tells how to walk with the legs, not the back. Primarily designed for the beginning backpacker, it includes tips even an experienced hiker would find interesting.

WILD EDIBLE PLANTS OF THE WESTERN UNITED STATES by Donald R. Kirk, Naturegraph Publishers, Healdsburg, CA, 1970, 307 pages, paperback, no price listed.

This book is intended as a guide to edible plants and should be taken with you

whenever you are in the field. It covers plants found in the western third of the U.S. from Canada to Mexico. The author includes pen and ink drawings of the plants discussed, together with their scientific and common names and preparations and uses.

HOW TO LIVE IN THE WOODS ON PENNIES A DAY by Bradford Angier, Stackpole Books, Harrisburg, PA, 1971, 192 pages, \$6.95.

The author has lived in the wild and now, he shares his tips. He tells how to build a home, find food, preserve it, keep warm and find employment in areas where the air is still clean and the wildlife bountiful.

SAFE SNOWMOBILING: Fun Without Damage by James L. Thomas, Sterling Publishing Co., Inc., New York, 120 pages, \$3.95.

There's more to snowmobiling than pressing down the throttle. You'd never consider piloting an airplane without instructions, and you shouldn't drive a snowmobile without instructions either. Safety, maintenance and the environment are discussed in Thomas' book.

MAKENS' GUIDE TO U.S. CANOE TRAILS by James C. Makens, Ph.D., available only from Le Voyageur Publishing Co., 1319 Wentwood Drive, Irving, TX 75061, 86 pages, paperback, \$4.95.

The book indexes nearly 900 canoe trails throughout the U.S. and rates them. Each trail is described with information on access points, dangers and distances. Every state except Hawaii is represented.

MOUNTAINS OF THE WORLD by William M. Bueler, Charles E. Tuttle Company, Rutland, VT, Tokyo, 1970, 279 pages, plastic-covered, \$5.25.

This compact guide includes all the world's "high spots." It also includes scores of other formidable, but less spectacular mountains, listing out-of-the-way peaks and ranges. The book contains 43 maps.

MOVING?

If you're planning to move in the near future, please fill out this blank and send it to MONTANA OUTDOORS, Fish and Game Department, Helena, Montana 59601.

FORMER ADDRESS:

name
address
city state zip

NEW ADDRESS:

name
address
city state zip



FGG photo by Craig Sharpe

Cherry Brandy Duck

- 1 wild duck, cleaned (whole or quartered)
- 1 T. sugar
- ½ T. crystallized ginger, finely cut up
- dash salt
- ½ T. orange peel, finely shredded
- ⅓ c. orange juice
- 1 T. cornstarch
- 1 can (16 oz.) pitted cherries, drained
(reserve syrup)
- ⅓ c. cherry flavored brandy

Preheat oven to 350°F. Wash and dry duck. Brown thoroughly in a small amount of fat in a skillet; place in a baking dish. In a small saucepan, combine sugar, ginger, salt, orange peel, orange juice and ⅓ c. of the reserved cherry syrup. Heat to boiling and pour over the duck. Bake, basting occasionally, 45-60 minutes. (Duck is done when juices are no longer pink when meat is pricked with a fork.) Place duck on warmed platter. In a small saucepan, combine remaining cherry syrup with cornstarch. Cook, stirring until thick. Boil 1 minute. Add cherries and brandy to sauce and heat through. Serve over duck. Serves 3-4.

**please turn page
for more recipes**

FAVORITE FISH AND GAME RECIPES

by Kay Morton

Fish from the store just aren't the same as fish from a lake or mountain stream. And, domestic ducks just can't compare with the wild varieties.

Finding new ways to prepare wild game and fish may be as challenging for the cook as bagging the game or catching the fish was for the sportsman. Game and fish recipes proliferate, yet each cook has his own touches and ingredients which make a dish special. Here are 10 favorites sent to us by department personnel and other readers.

VENISON FONDUE

Fondue is a fun way for guests to join in the cooking. Try it with venison and a curry sauce.

Into a saucepan measure enough vegetable oil to fill your fondue pot half full. Add one stick of butter and bring to a boil. Pour the mixture into the fondue pot. Cut the venison into 1-inch cubes, allowing about ½ cup per guest. Serve the meat at room temperature. Place the fondue pot on its heater and maintain the oil at a high temperature. Guests spear the venison chunks with fondue forks and cook to the desired degree of doneness. The meat is enhanced by dipping it into a favorite fondue sauce.

Curry Sauce

3 T. butter
1 t. curry powder
2 T. flour
½ t. salt
1 c. warmed milk
pinch of cayenne pepper.

Melt butter in a saucepan over low heat. Stir in the curry powder and cook for two minutes. Blend in the flour, salt and cayenne pepper. Add the warmed milk all at once. Cook quickly, stirring constantly with a wire whisk until the mixture is smooth and thick. Serve hot with venison fondue. Makes one cup of sauce.

MONTANA TROUT BAKED IN WINE

This simple gourmet treat is sure to become a favorite.

3-4 good-sized trout (8-10 inches long)
6 T. butter
¾ c. chopped onion
½ c. chopped parsley
1 c. dry white wine, such as sauterne

Clean trout, leaving head and tail. Sauté the onion and parsley in the butter. Spread ⅓ of the mixture on the bottom of a baking dish. Fill the cavity of the fish with ⅓ of the mixture and place the rest on the top. Pour the dry white wine over the top and cover. Bake at 350°F. until done (25-30 minutes). Uncover and sprinkle with bread crumbs.—*Virginia Burns, Helena*

SAVORY PHEASANT

This recipe for pheasant combines the delicate flavor of pheasant with vermouth and spices.

2 pheasants, plucked and cleaned
flour, seasoned with salt, pepper and paprika
butter
2 onions, chopped finely
½ c. sweet vermouth
1 t. tomato paste
1/8 t. cinnamon
1 t. salt
dash freshly ground pepper
soft butter
buttered toast triangles

Cut pheasants into serving pieces. Dust with seasoned flour and brown in butter. Transfer to roasting pan. To remaining butter in skillet, add onion and sauté until transparent. Add vermouth, tomato paste, cinnamon, salt and pepper. Cook for two minutes and then pour around the pheasants.

Spread soft butter on pieces of the bird and roast for 1 hour at 350°F., or until meat is tender. Arrange triangles of buttered toast on hot platter and pour a spoonful of sauce from the roaster on each piece. Place pheasant pieces on top and garnish with watercress.—*Nikki Konitz, Lewistown*

The following two recipes are reprinted from the **TENNESSEE CONSERVATIONIST**, a publication of the Tennessee Department of Conservation and the Tennessee Game and Fish Commission.

VENISON MEAT LOAF

2 lbs. ground venison
½ c. chili sauce
1-½ t. salt
2 T. butter
½ t. thyme
2 eggs
¼ lb. pork sausage
1 small can tomato juice
1 t. pepper
1 c. bread crumbs
1 medium onion, chopped
2 stalks celery, chopped

Place all ingredients in a large mixing bowl and mix thoroughly. Transfer to a buttered loaf pan and bake for 1-¼ hours at 400 degrees. Serve hot.

VENISON SOUP

2-½ lbs. venison (shank, flank, neck or breast meat)
2 quarts cold water
1 c. diced carrots
1-½ c. diced potatoes
¾ c. diced celery
½ c. onion, finely chopped
2 T. parsley, finely chopped
3 c. tomato juice
2 T. salt
¼ t. pepper
½ t. savory
1 T. sugar

Simmer meat in salted water for 2 to 2-½ hours, skimming occasionally. Let broth stand overnight in refrigerator so fat will congeal. Remove congealed fat and add vegetables, juice and seasonings. Simmer slowly for about two hours.

PICKLED FISH

We received two similar recipes for pickling whitefish: one from Dr. J.S. Mest, Manhattan, and the other from Vern Campbell, Somers. Both "chefs" say whitefish are especially good when pickled in the following way, although the recipe also works for yellow perch, bass, pike or catfish.

Scale and clean fish, removing heads and tails. If fish are under 12 inches, cut them crosswise into bite-sized pieces. If fish are over 12 inches, cut lengthwise first and remove the backbone, and then cut into bite-sized chunks.

Cover the bottom of a one- or two-gallon stone crock with rock salt. Add a layer of fish and cover the fish completely with rock salt; continue this process, making sure that each layer of fish is completely covered. Add no water. Let stand 10 days. Remove the fish from the crock, wash the pieces thoroughly in fresh water and let them stand in cold water for about 4 hours.

Depending on the amount of fish to be covered by the pickling liquid, blend 2 parts white vinegar and 1 part water, 1 cup of olive oil and 1 cup white sugar. Bring the mixture to a boil; return the fish to a clean crock and pour the mixture over them, and allow it to cool to room temperature.

Add the following:

1 box, 3-4 oz., pickling spice
2 cloves of garlic, thinly sliced
3 medium onions, sliced in 1/4-inch slices
1 orange or lemon, sliced

Stir lightly every other day. Let stand 8-10 days.

Fish may be kept in jars in the refrigerator or may be placed in freezer boxes and stored in the freezer.

ROAST WILD DUCK WITH STUFFING

A recipe for the classic roast wild duck with stuffing is a must for the beginner. "Old hands" at game cookery might benefit from someone else's secrets.

1 c. chopped onion
1 c. chopped celery
3/4 stick butter or margarine
4 c. dry bread cubes
1-1/2 t. salt
1/2 t. pepper
1 t. sage

Melt butter or margarine in heavy skillet over low heat; add onion and celery and sauté slowly until onion is transparent. Put bread cubes in large bowl and add salt, pepper and sage. Add enough water to the onion-celery mixture to make dressing quite moist; bring to a quick boil and pour over bread cubes and toss. Makes enough stuffing for two ducks.

Season ducks generously with salt and pepper, inside and out. Add dressing and close the cavity with aluminum foil. Place ducks, breast down, in a large roasting pan, uncovered. Place four pieces of bacon across each duck. Roast in 325°F. oven for 3 to 3-1/2 hours or until skin is crisp and dark brown.

For gravy, pour off excess fat and add one small can evaporated milk. Loosen drippings on low heat and add 1-1/2 cups cold water. Stir in flour (amount

depends on how thick you like your gravy) and water mixed together and cook slowly.—

Don and Esther Brown, Bozeman

Recipes from ground gameburger are endless. Most recipes calling for ground beef can be made successfully with ground venison, elk, bear, or whatever ground game you have handy. Lasagne and Hawaiian hamburgers are examples.

LASAGNE

1 lb. ground gameburger
1 no. 2-1/2 can tomatoes
1 8 oz. can seasoned tomato sauce
salt to taste
2 cloves garlic, minced
1/2 t. sweet basil
1/2 t. whole oregano
1/2 t. rosemary
pinch of fennel (optional)
8 oz. mozzarella cheese, sliced thinly
8 oz. ricotta or cream style cottage cheese
1/2 c. grated Parmesan cheese
8 oz. Lasagne noodles, cooked

Brown meat slowly in skillet; spoon off excess fat. Add tomatoes, tomato sauce, salt, garlic and spices. Cover; simmer for at least an hour, stirring occasionally. Place about half the cooked noodles in a rectangular baking dish. Cover with 1/2 of the meat sauce, 1/2 the mozzarella, 1/2 the ricotta and sprinkle with Parmesan cheese. Repeat the layering, ending with the cheeses on top. Sprinkle with remainder of parmesan cheese. Bake at 350°F. for 25-30 minutes. Allow to set for 5-10 minutes before serving.

HAWAIIAN HAMBURGERS

2/3 c. evaporated milk
1-1/2 lb. gameburger (from deer, elk, etc.)
1/2 c. onion, chopped
2/3 c. cracker crumbs
1 t. Alpine seasoned salt

Mix and form into patties. Brown in a small amount of fat and cover with the following sauce. Simmer for 15 min. or more.

Sauce

24 oz. can pineapple chunks, drained (reserve syrup)
4 T. cornstarch
1/2 c. vinegar
1/2 c. brown sugar
1/4 c. soy sauce

Mix cornstarch, vinegar, brown sugar and soy sauce with 1 c. of the reserved pineapple juice. Bring to a boil, stirring constantly, and continue cooking until thick and clear. Add pineapple chunks, heat through, and pour over meat mixture.—*Jim and Helen Ramsey, Missoula*

We plan to publish more recipes. If you have some favorites, please send them to us and we'll credit you in the next article.—Ed. 





Should we hunt the hen pheasant?

by John P. Weigand

THE RING-NECKED PHEASANT has attracted Montana hunters and landowners since its introduction into the state in the early 1900s. The pheasant's compatibility with early land uses and farming practices contributed to its charisma and the greatest densities often occurred in relatively heavy farming areas. Spectacular coloration of male pheasants enhanced ornamental values of farmlands. Sporting and table-fare qualities settled any remaining arguments about maintaining pheasants in Montana.

Anxiety about perpetuation of the pheasant in Montana continues to generate the controversial question: Does regulated fall hunting of hens adversely affect future pheasant populations? The answer lies in careful examination of the pheasant's biology.

During the past 13 years, department biologists have recommended a limited hen harvest to the Fish and Game Commission and Montana hunters. Major reasons for this recommendation were (and continue to be):

- Annual mortality of pheasants, with or without hunting, is 60 to 70 per cent.

- A percentage of hens in autumn is surplus to maintaining the next year's pheasant population.

- Montana lacks the hunting pressure necessary to harvest the entire annual surplus of pheasants, cocks or hens.

HEN HARVESTS EVALUATED

Before reopening the legal shooting of hens in 1959 (hen shooting was allowed in 1942 and 1943), studies of pheasant population dynamics and effects of hen harvests on succeeding populations in other states were evaluated. On a Wisconsin refuge, where absolutely no hunting was allowed, annual pheasant mortality was 81 per cent. Only 19 per cent of the cocks and hens survived from one year to the next.¹

In California, 18 years of limited hen shooting were allowed and more wild hens were killed than cocks. Yet, no measurable decreases in pheasant populations occurred.² Annual mortality of hens in California remained at 65 per cent before and during hen shooting. In other words, hunting mortality was substituted for part of the nonhunting mortality. This study showed that up to 45 per cent of the annual fall hen popula-

continued

read all the way through this and then decide

*The hen pheasant.
(photo by Jon Cates)*

tion could be harvested by hunters without endangering reproduction.

A recent Washington study showed 6-12 per cent of the fall hen population was legally harvested by hunters but an additional 33-39 per cent died before the following spring.³

The Montana Fish and Game Commission reinstated limited hen shooting on an experimental basis near Fairfield (Teton County) in 1959 and near Kinsey (Custer County) in 1960. The Fairfield area was studied carefully because of its proximity to a larger hunter population. The two-year study⁴ was conducted 35 miles northwest of Great Falls on the Sun River Irrigation Project, an area known locally as the Fairfield Bench. One hen was allowed in the three-bird daily bag during the first eight days of the 29-day seasons. A tag was attached to each bagged hen by check station personnel and it was unlawful for hunters to remove untagged hens from the hen harvest study area. A second irrigation project, 35 miles northeast of Fairfield Bench, was a control area where cocks only (three per day) shooting for 29 days was allowed. Hunting seasons opened the same day on both areas.

Winter surveys following these hunting seasons indicated more hens per cock in the cocks only area. Higher breeding populations (cocks and hens) were found on the cocks only area each spring. *Summer surveys, however, indicated larger broods in the hen harvest area.* The number of young per mile and total birds per mile was slightly greater in the hen harvest area.

Examination of hunter-killed birds at check stations showed higher juvenile cock per adult cock ratios in the hen harvest area. This supported conclusions about larger broods found during summer surveys on the hen harvest area. Check station data also revealed hunters averaged more birds per hunter and spent less time bagging each bird than hunters in the cocks only area.

FACTS ABOUT HUNTING PRESSURE

The proportion of hens harvested from the Fairfield population was unknown, so California's "safe ceiling" of 45 per cent hen removal could not be tested directly. A Utah study suggested knowledge of relative hunting pressure could be used to determine approximate proportions of hens harvested. In Utah, hunting pressure ranged from 40-50 hunters per square mile during limited fall hunting of hens.⁵ In 1961 (one hen allowed per hunter for the nine-day season), 7-10 per cent of the hens were harvested during the fall season. Limited data in 1962 (one hen per day during the nine-day season) indicated an estimated harvest of 35-40 per cent of the available hens. In 1963 (one hen per day during the last days of the five-day season), more reliable data showed 7-24 per cent of the hens were bagged.

Based on Utah's findings, it would have taken more than 5,500 hunters during the eight-day hen

season to harvest approximately 25-35 per cent of the available hens from the Fairfield Bench. During opening day, Fairfield area check stations reported 1,131 hunters in 1961 and 1,290 hunters in 1962. An earlier study in the Fairfield-Conrad area showed 50 per cent of the season's hunting pressure on pheasants occurred opening day.⁶ Approximately 68 per cent of upland game bird hunters stop at voluntary check stations.⁷ However, the percentage of hunters stopping at Fairfield check stations was probably more than 68 per cent because of the hen tagging regulation.

Thus, the estimated total number of hunters (3,325 in 1961 and 3,795 in 1962) was insufficient to harvest approximately 25-35 per cent of the avail-

As the use of agricultural land intensifies, we can expect pheasant numbers to decline.

able hens. It is highly improbable that the hunting pressure or proportions of hens harvested in Utah has been experienced in Montana. It is even more improbable that the proposed 45 per cent "safe ceiling" harvest of hens has been—or can be—attained in Montana under existing hunting pressure.

Results of the Fairfield study demonstrated hens could be harvested with no measurable

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adverse effects on pheasant populations. So, legal shooting of hens was gradually allowed in other parts of Montana. Southeastern Montana counties progressed to three-bird, either sex daily limits during 1962-67. Since 1969, one hen has been allowed in the daily three-bird bag throughout the state with two small exceptions; cocks only hunting was allowed in part of Yellowstone County in 1971 and 1972 and in Lake County in 1972.

Long-term investigations in Montana show pheasant populations are maintained in areas with liberal full season, either sex daily bag limits. Hunters assisted in these investigations through interviews at check stations from 1955-70 in southeastern Montana along the Yellowstone River Valley and its tributaries from Forsyth to Glendive. Hunting success fluctuated noticeably throughout the 16-year period (Table 1). During 1955-59, cocks only season hunters were less successful (average of 107 birds per 100 hunters) than hunters during the first five years (1960-64) of hen shooting (average of 115 birds per 100 hunters).⁸ The highest recorded success in 16 years (164 birds per 100 hunters) was in 1963 and occurred after two years of either sex seasons. The second highest success (145 birds per 100 hunters) occurred in 1968 after six years of either sex shooting and only four years after pheasant populations were almost eliminated during the 1964-65 winter.

PHEASANT REQUIREMENTS

Granted, pheasant numbers in Montana have declined since the early 1950s. But hunting regulations are not the cause. Pheasants are a product of an agricultural environment, primarily crop land. They require heavy woody cover for protection in winter, undisturbed grass-forb (weedy) cover for nesting in spring and abundant, uncontaminated food supplies (insects, grain and weed seeds).

Prior to 1940 these requirements were fulfilled in many areas of Montana. Since World War II, more intensive land use and advanced farming methods have reduced the quantity and quality of pheasant habitat. Today, there are fewer but larger farms⁹ which usually means larger fields with less "edge effect"—old fence lines, woody cover and idle areas. "Cleaner" farms are made possible by pesticides and more intensive land use.

Since 1950, Montana's crop land acreage has declined 16 per cent, while alfalfa acreage and cattle

TABLE 1
Pheasant hunting success and daily bag limits in southeastern Montana, 1955-70

Year	Pheasants per 100 hunters ¹	Daily bag limit
1955	135	3 cocks
1956	76	3 cocks
1957	112	3 cocks
1958	128	3 cocks
1959	79	3 cocks
1960	98	3 cocks; 3 birds total, 1 hen allowed per day ²
1961	95	3 cocks; 3 either sex ²
1962	123	3 either sex
1963	164	3 either sex
1964	94	3 either sex
(Extremely severe winter, 1964-65)		
1965	59	3 either sex
1966	77	3 either sex
1967	121	3 either sex
1968	145	3 birds total, 1 hen allowed per day
1969	112	3 birds total, 1 hen allowed per day
1970	117	3 birds total, 1 hen allowed per day

¹Opening day check station data

²Hen regulations applied during first eight days to Kinsey Irrigation Project (Custer County) only

numbers each have increased 63 per cent. Alfalfa, which replaced grain on many irrigation projects, serves as a death trap during mowing for many nesting pheasants. Cattle graze the alfalfa, remaining grain stubble, irrigation ditches and woody areas and thus reduce the available cover and food for pheasants.

An expanding human population with increasing demands for food may intensify agricultural land use even further. Pheasant numbers can also be expected to decline further—unless pheasant habitat requirements are incorporated into land use planning and land retirement programs.

Whether high or low, pheasant populations produce a surplus of birds each year. Hens, representing the actual base of pheasant breeding populations, could be justifiably referred to as "sacred." Conversely, a certain portion of the hens are annually "surplus" to population maintenance. Scientific studies show harvesting part of this "surplus" is a biologically sound facet of Montana's pheasant management program.

"Sacred" or "surplus"? The pheasant hen is both! 

ABOUT THE AUTHOR

John P. Weigand is a game research biologist for the department in Choteau. He received a B.S. degree in biology from Wisconsin State University in Stevens Point and a M.S. in wildlife management from Michigan State University, East Lansing.



